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*"The Seas but Join the Nations they Divide."*

THE

# NAUTICAL MAGAZINE

FOR 1884.

NEW SERIES.

A JOURNAL OF PAPERS

ON SUBJECTS CONNECTED WITH

MARITIME AFFAIRS.

VOLUME LIII.

London:
SIMPKIN, MARSHALL & CO., STATIONERS' HALL COURT
J. D. POTTER, 31, POULTRY;
KENT & CO., PATERNOSTER ROW;
AND THE PRINCIPAL NAUTICAL PUBLISHERS AT ALL SEAPORTS.

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28, LITTLE QUEEN STREET, LINCOLN'S INN FIELDS, W.C.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. I.

JANUARY, 1884.

## THE STABILITY OF MERCHANT SHIPS.

DURING the last year the attention of those interested in shipping has been drawn in a marked degree to the question of the stability of merchant ships. In July last, in the launching of a vessel on the Clyde, a great disaster occurred which was made the subject of a searching investigation conducted by an eminent naval architect, and in September an enquiry was held by the Wreck Commissioner into a case of partial capsize and sinking in harbour of one of the largest merchant steamers afloat. The *Daphne* enquiry served to bring home to shipbuilders the importance of attention to precautions which had of late somewhat fallen into disuse, and was made the occasion of probably the first public statement in scientific language of a branch of the theory of the stability of floating bodies. The second enquiry certainly did not bring out anything new, and indeed there appeared no reason arising from the merits of the question why any great amount of consideration should have been given to the question of the ship's stability; but nevertheless the *Austral* like the *Daphne* was made to illustrate a lesson on the importance of scientific knowledge and



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enquiry, and the Wreck Commissioner vied with the most distinguished naval architect of the day in enforcing the value and necessity of a more scientific treatment of the question of the stability of merchant ships in the future, than has obtained in the past.

The question of the stability of ships of war has received very much more attention than that of merchant ships, and while it may be said that this has been rendered the more necessary on account of the rapid succession of novel types of war ship, it is at the same time more practicable in consequence of the greater certainty of the conditions involved. Merchant ships do not differ from each other so much as war ships do; changes in design in the former are made by slow and easy steps, and thus any advance in the wrong direction is the more likely to be corrected by experience before it has gone very far. On the other hand the problem of the stability of a merchant ship is indefinite, whereas in the war ship it is well defined. The latter has her weights disposed at the will of her designer and although changes are caused by consumption of coal, or may be brought about in action by the perforation of compartments and admission of water to them, such changes can be accurately estimated and provision made to meet their consequences. In a merchant ship, on the other hand, varying weights are a very large part of the account, and their disposition is beyond the control not merely of the designer, but even of the owners or master. The stevedore proceeds upon simple methods, the result of his own experience, and their successful application in each case depends upon his individual knowledge and judgment. The mate has his time fully occupied while the vessel is loading in keeping tally of the cargo, or in receiving and checking the amount of stores, and the master of the ship too often is anywhere but on board the ship supervising the stowage of the cargo. Meanwhile merchant ships are multiplying, new types are coming into existence and old types are being transformed, the result being that vessels of most diverse forms, proportions, and qualities exist, in which rule of thumb stowage is to say the least very much less certain to secure good results than if the work to be done were of a more uniform character. No wonder then

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have not been considered and appreciated. One of the old traditions of the shipbuilder has been that no moveable dead-weights should be on board the ship at the time of the launch. In the hurry and bustle of modern competition this old maxim has been disregarded very frequently, and long immunity from accident has tended to perpetuate neglect of the old precautions. Similarly the specially dangerous condition of vessels in the extreme light condition has been well understood, and every shipmaster knows that a crank vessel when very light may completely capsize under conditions where an equally crank loaded ship would simply take a list and remain permanently inclined at a moderate angle. We cannot grant that the mere enunciation in scientific terms of a previously well-known fact is of itself a scientific discovery.

In looking about for possible causes of the disaster, various suggestions were made by actual observers and others, which were all carefully considered by the Commissioner. One was that there is in the River Clyde, at certain states of the tide, an up current above at the same time that there is a down current beneath. This suggestion being considered in connection with the evidence of the engineer to the Clyde Trust, was dismissed as not being in accordance with the observed facts of the case. It was further suggested that in the launching of a ship after she has lost the support of the ground-ways, and before she is wholly waterborne, there is a passing phase of instability. This view was advanced by M. Benjamin Normand, of Havre, and in reply it is urged with justice that "the duration of this state of things is so brief, that it can hardly have any greater effect than that of setting up some little inclination, which probably accounts in part for the occasional slight rolling of a ship after launching. No doubt the passing phase of instability which the just-launched ship may momentarily experience is deserving of consideration, especially when other circumstances co-operate with it, but where the ship was well launched as the *Daphne* was, and takes the water with a proper velocity as she did, its effect is in my judgment too small and too transient to furnish the necessary force for capsizing the ship."

While thus disposing of these suggestions as to the cause of the capsize, and at the same time coming to the conclusion that

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the vessel had a metacentric height of four inches, Sir Edward Reed does not in his report make any suggestion as to what was the actual inclining force. It would appear that but a very small force was necessary because there were elements of danger in the vessel in the shape of weights which, given an inclination of moderate amount, would move to leeward, and would be sufficient to use up all the righting power of the ship. On this point it is said:—"I have made numerous calculations showing what changed conditions would exist upon various assumptions as to weights moved; but although there were over 30 tons of loose weights (including men) on board, I will content myself with assuming that only 15 tons moved across the decks and holds, through an average distance of 15 feet—a moderate assumption. This, however, would have sufficed to incline the ship permanently at an angle of over 30 degrees from the upright, and in carrying her over to that angle would have accumulated sufficient work to nearly, but not quite absorb, the remaining stability. The vessel would, on this assumption, have ceased to roll over, and even have returned slightly towards the upright position; but it is not to be expected that the vessel was watertight up to the top deck; indeed, it is certain that she was not, and that some water found its way on to the main deck, and this fact, taken together with the further shifting of weights, which would occur at so large an inclination, would cause her to be carried over again. At 50½°, the water would flow over the bulwarks, and complete the capsize." With the state of things thus described, it is evidently not necessary to go far to seek the cause of a small primary inclination, from which the capsize would inevitably result. Whether such a cause might be found in the action of the water upon the propeller, in the effect of the vessel being brought round in the water by the drag-chains, or by the action of waves set up by the sudden displacement of water in a narrow river, is obviously only of secondary importance. The lesson to be learnt is, that the special dangers connected with launching must be provided for by proper ballasting, by the securing of all heavy articles on board, and by strictly limiting the number of persons in the vessel during the launch.

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The question of stability, however, as concerning launching is obviously of much less importance than the larger one opened up by Sir Edward Reed in his remarks upon the general question. On this point he says:—"The general belief that a high-sided ship having some initial stability will, as she inclines, gather additional stability, and will retain some even at very large angles, has exercised a widespread influence upon modern mercantile shipbuilding, and has greatly encouraged people to be satisfied with very small initial stability, in some cases with none at all, and even less than none. Many steamships of large tonnage have been built of late years, for influential steam companies and other owners, which ships are wholly incapable of floating upright without the aid of ballast or of cargo, and which cannot be unloaded in dock without being held upright by hawsers attached to the shore. Such ships, even when capable of floating unballasted without capsizing, can only do so by lolling over at large angles of inclination, and there finding a position of stable equilibrium. When carefully watched over, and stowed with suitable cargoes, these ships can usually be made safe at sea, and sometimes even safer than ships with larger initial stability but less range—a circumstance to which undue prominence has perhaps been given, and which has diverted many from the grave elements of danger which much more often are associated with small initial stability."

We have in these pages more than once protested against the undue importance which has of late years been attached to range of stability in merchant ships. Just as large initial stability must to secure safety be associated with proper range, so large range will not make up for deficient metacentric height. There is always some part of the cargo or coals which can shift, and with small initial stability the vessel gets a list, and if in that condition she meets with bad weather, the consequence is disaster.

Further, the very proportions which conduce to small metacentric height are those which tend to secure large range, so that if, in answer to a charge of crankness against a ship, the plea is made that she has large range, it is much the same thing as directly admitting the defect.

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One reason for the existence of many vessels of low initial stability is found in the notion now exploded that speed depended largely upon smallness of beam. The last few years have seen a beneficial change in the proportion of beam to depth, and a better state of things as regards stability, especially in the case of vessels built for cargo rather than passengers. In many of the largest ocean steamers, the proportions even of new vessels are against their stability, but in their case, owing to the diversified character of the cargo, and in some cases to the existence of well-divided ballast tanks, it is easy to keep the actual stability of the ship under control. Such vessels, too, in regular trades are stowed voyage after voyage by the same stevedore, and thus there is every opportunity of correcting the stability by proper stowage.

In commenting upon the question of the stability of merchant vessels, Sir Edward Reed made some remarks which appeared to indicate that the importance of that question was imperfectly appreciated in enquiries into losses at sea. The Wreck Commissioner has since pointed out that this is not the case, and it is understood by a subsequent explanation that the reference was rather to the fact that evidence is not forthcoming as to stability than that the question is not considered. It has been the usual practice in these enquiries for the Board of Trade to call evidence as to fact, the Court being constituted so as to form its own opinion by the aid of nautical or scientific assessors. Evidence as to stability is difficult to obtain, because owners do not think the information of sufficient value to induce them to get it in the first instance. After the ship is lost her conditions of stability may be obtained approximately from the drawings, but it is obvious that such information got up for the purpose of evidence is less valuable than an exact account of the vessel's stability got out by experiment for use in loading her. It is only just to the Wreck Commissioner to point out that in enquiry after enquiry he has directed attention to the question of stability, and has as often expressed his regret that shipowners did not make it their business to obtain exact accounts of the stability of their ships.

In the *Austral* enquiry, it certainly appeared that the scientific aspects of the case were pushed so far as to put out of sight the plain and simple causes of the accident. The crude notion

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of the Wreck Commissioner that the metacentric curve for various immersions and curves of stability at the light and load draught could be placed in the hands of the shipmaster who, with a little reading up on the subject would be able by their means to regulate the stowage and ballasting of his vessel, needs only to be stated for both naval architect and sailor to perceive its futility.

The fact must not be lost sight of that the intelligent shipmaster does know very much about stability, if he does not know what the metacentre means; that if he cannot calculate the exact metacentric height from an experiment, such as would be made by the naval architect, he can and does make experiments of his own. As soon as the vessel gets clear of port, he knows whether she is too stiff or too crank; and if he is in any doubt he can set a topsail and notice its effect. After one or two voyages, he knows how his vessel should be stowed and what ballast is necessary either to shift her in port or to take her to sea. If he does not dare to put back when he knows his ship to be crank, that is quite another matter, and indicates a relation between himself and his employers for which a remedy must be sought in some other direction. Put the information which the shipmaster already has into scientific form, before you have thoroughly taught him to read the language of science, and you simply confuse him; he is led to forsake the little bit of firm ground on which he stood, to flounder in a quicksand. Now, it is quite certain that the average shipmaster cannot be made a scientific naval architect, nor can he hope to master the whole question of stability. Such a hope would indeed appear to be altogether vain in view of what we are told in the *Daphne* report, that on a most important part of the question numbers of naval architects and even writers of standard works on naval architecture have accepted erroneous views which will not for a moment stand the test of scientific investigation, and which, as soon as they are carefully considered, are seen to be wrong. If what is thus said is to be taken as it stands, the retort is obvious:—"Before you presume to teach us (the shipmasters) how to stow and manage our ships, make sure of your own position; better be ignorant as we are, than spend time and trouble in acquiring learning; which, after all, may not be knowledge of fact, but only imagination." The truth is,

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however, that the remark is not to be taken too literally, the teaching in question is true as far as it goes, or was ever intended to go, and if it be the case that the stability of ships at launching draught has escaped notice in works on naval architecture, no one has ever been misled by applying to it conclusions drawn from a treatment of the subject obviously intended only to include laden vessels.

The important question then remains :—Can any valuable information as to the stability of ships be put into such a form as to be practically useful to the shipmaster, and is there ground for hoping that the shipmaster may be made capable of using it? The latter part of the question must not be left out, for we believe that however the information may be simplified, it is more likely to be injurious than beneficial, without some elementary scientific training being gone through by the shipmaster. Sir Edward Reed thinks it "high time that some knowledge of the elements of a ship's stability were imparted to the officers of the Mercantile Marine, and required of them by the Board of Trade examinations." This is certainly beginning at the right end, scientific preparation must be undergone before scientific information can be used. In his evidence at the *Austral* enquiry, Mr. Martell told the Wreck Commissioner that many shipbuilders were almost as deficient of such knowledge as the shipmaster is said to be, and that knowledge of the theory of naval architecture was at present the property of the few. In his opinion, the notion of the curve of stability being made of any service to the ship's officers was altogether a visionary one, and this view of the question is probably the more general among those competent to judge. It would evidently be very difficult for the Board of Trade to require from candidates for certificates, knowledge which is at present possessed by a very few (and who knows how few) of those who have actual charge of ships, and which is moreover considered to be useless by most of their employers. A beginning, however, might be made by the Board of Trade giving master's certificates for knowledge of naval science just as they now give them certificates for passing in steam, and if the results of such examinations were at all such as to justify the change, stability might in time be made

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a compulsory subject. We need hardly say that any such extension of the scope of examinations would raise the position of the shipmaster, and secure for him more of that respect and consideration necessary to the proper discharge of his obligations alike to his employer and to those whose lives are in his keeping.

It may be useful to consider what is done in this matter in connection with the Royal Navy, not forgetting however that while the Admiralty combines in itself the functions of shipbuilder and managing owner, the Board of Trade has merely the right to interfere to prevent serious danger to human life. Officers in the Royal Navy are instructed at the Royal Naval College at Greenwich in the elements of naval architecture, and provision is thus made that such information as is furnished by the Admiralty in this respect shall be understood by some one on board each ship. In a paper contributed to a recent number of *Nature*, Mr. W. H. White, late Chief Constructor of the Navy, and some time Instructor in Naval Architecture at the Royal Naval College, has stated this, as follows :—

"Each of Her Majesty's ships is provided with a 'Statement of Stability' in which appears a record of the 'metacentric heights,' corresponding respectively to the 'fully laden' and the 'extreme light' conditions of the vessel. There is also a record of the calculations of stability at various angles of heel; the angle at which the stability attains its maximum and that at which it vanishes being noted. In cases where special precautions are needed special standing orders are given. For instance, in some low freeboard ships it is stringently ordered that a certain maximum load draught shall not be exceeded, because any diminution of the corresponding freeboard would cause an objectionable decrease in the range and area of the curve of stability. Again, in some vessels, as coals and stores are consumed, the stability is considerably diminished, and then orders are given that the ship shall not be lightened beyond a certain minimum draught, that draught being maintained if necessary by the admission of water ballast. All these regulations are based upon careful experiment and detailed calculations. In the original design of the ships close attention is bestowed upon the question of

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sufficient stability; and when the vessels are completed, an experimental check is put upon the intentions of the design, any necessary corrections being made in the original calculations."

It will readily be seen that all this information would be as necessary in a merchant ship as in a war ship, and in addition to it very much more would be required. The master would, in the first place, need some ready means of ascertaining the actual metacentric height of the ship. This could be done either by calculation or experiment. It is not easy to see how the former could be so far simplified as to be at all practicable, and we must suppose almost a revolution in ordinary commercial practice before we can imagine how time and opportunity could ever be found for the latter, although it might only be occasionally necessary to do it. There would be no great difficulty in instructing anyone with a little knowledge of mechanics how to perform an inclining experiment, and the simplest way of working up the result would be to have provided for the purpose a slide rule, from which, given the draught of water, the weight multiplied by the distance through which it was moved and the angle of consequent inclination, the corresponding metacentric height could be read off. It would further be necessary to get out for each ship the maximum and minimum metacentric heights admissible for the light and load, and in some cases for intermediate draughts. From this brief sketch of what would be required in order to deal with the question in merchant ships by a method analogous to that adopted in the Royal Navy, it will be seen that very much progress must be made in many ways before it can even be thought of.

(*To be continued.*)

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## INSUBORDINATION OF SEAMEN.

THE various cases of insubordination which are so frequently cropping up in the Merchant Service of this country, and the scandalous disclosures connected with such, brings out in disagreeably strong light a state of things of which the nation can hardly be supposed to be proud. Such cases would certainly appear to go very far to prove the truth of the many assertions, that the law, as it stands, is inadequate to maintain a healthy state of discipline, and to suppress crime and disorder, when such have broken out.

Whatever may be the cause, and whoever may be to blame, the popularity of the service is falling; not only amongst commanders and officers, but amongst the sailors themselves, who may be expected to have a very natural contempt for a service which appears to be approaching to a state of anarchy, and which is governed by laws made for them to laugh at.

There has been demand in certain quarters for a better class of seamen—seamen of British blood—and for the reintroduction of apprentices. Inducements have been held out for a better class of lads to come forward and join the ranks of this service; some *have* come forward, tried it for a year or two, and left for fresh fields and pastures new—they were wise in time. And how can it be expected that a better class, if coming forward, will remain, under the foregoing conditions. Their reply might well be—No! we are not going to join a sinking ship, let the authorities put her in order, and let the ordinary conditions of life be as suitable and harmonious as in other occupations, and then we will think about it.

Granted, however, that a better class came forward as able seamen and stood to their guns, it is doubtful how matters would be improved. They would certainly under the present lax state of things become quickly demoralized, and probably in the end little, if any, better than the others. But what we appear to want, is not so much a better class, as better rules to control any class.

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The worst cases of insubordination which have occurred, short of murder, in those vessels making long voyages round the Cape of Good Hope or Cape Horn, have been amongst our own men, British seamen.

It has frequently been said that foreign seamen are superior to our own in every respect; and in regard to foreigners of Scandinavian origin, to Germans, Swedes, or Norwegians, such is probably the case.

They are, doubtless, a more steady and sober lot of men than ours, taking them generally. There are many causes for this, and the first is that they are naturally more tractable, more patient, and of a more submissive temperament than the British. They are also, with very few exceptions, the best practical seamen we have; and they learn their business in small barques and brigs, knocking about the Baltic and the coasts of their respective countries; much in the same way as our own men did in the halcyon days of sailing colliers. Coming also on board of a strange ship with an imperfect or in many cases no knowledge whatever of the language, receiving better pay, and possibly better food than they had left behind them, would manifestly impress young men, in no ordinary degree, with respect for and the importance of obedience to the existing powers. But, independently of all this, they are naturally quieter and better behaved men. The spirit of democracy, more or less inherent in the British race, does not appear to have reached the seamen of Northern Europe, or if it has, they have probably left it at home, before stepping over the gangway of an English keel. With our own seamen, that spirit, or some other equally tormenting and restive, is abroad; and has brought with it, as it so frequently does amongst certain classes, that contempt for law and order, and those erroneous ideas of equality and "rights," which are so incompatible with sea discipline. Still, notwithstanding all the above, the laws should be powerful enough to deal effectively and thoroughly with all cases of insubordination.

We may have tyrannical captains and officers, or we may have ships proceeding to sea in a leaky, or some other improper condition; badly found in stores and with other innumerable imperfections; yet we *must have* lawful authority supported, and in no

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unflinching manner. If a magistrate handles a case improperly, as often happens, let him be brought to book for it, and by the authorities who appoint him. Let the shipowners of this country, who are so much interested in such cases, see that this is done. They are quite powerful enough to make themselves felt in the right direction. If captains and officers commit themselves in their interpretation of the laws, or, as frequently happens, in overriding those laws, by all means let them suffer for their indolence or for their hastiness, either in not preparing themselves for their responsibilities, or in not understanding how to command themselves when in difficulties. A want of tact and sound judgment in their ranks may always be expected more or less, just as there is that want amongst all other men at sea or on shore. But there have been various cases of insubordination during the last twelvemonths, where the men appear to have had *all* but complete charge of the ship, as far as directing what work should be done, and at what hour duties should be begun and ended.

Thus, while agitating for more law, or for an improved code, or for magistrates who understand shipping matters better than some of them do—to judge from the decrees which have been given at some of their Courts—it is just worth while to ask commanders and their owners, who suffer immense mischief, loss, and annoyance, from mutinous seamen, whether they could not help themselves very much better than they have been doing any time during this last twenty years. A great deal has been said in favour of and against moral force in controlling large bodies of men, either as sailors or soldiers ; yet it will be found not only in all expeditions of danger or adventure, but in the less exciting affairs of the workshop on *terra firma*, that moral force is a most powerful agent in maintaining order, more powerful, perhaps, than any other in the hands of shrewd and cautious officers.

As an example of its power at sea, a short case may be cited, of a line of steamers which make long voyages to the other end of the world. The crews are shipped in the ordinary way. The chief officer selects those who have good discharges a day or two before engagement. Generally they have lately landed from all kinds of ships and from all parts of the earth. Though they possess clean

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papers, it must not be supposed they are all *angels*, and soon after leaving port the cloven hoof is apt to show itself. But the officers in those steamers can afford to laugh at all ideas of rebellion, for in their body there is force and cohesion. If Jack discovers that he is called a little too early in the morning to suit his fastidious ideas of sea life—perhaps at 2 a.m., to wash the decks and clean the brass work—and is inclined to make a noise about it, he also discovers on opening his eyes a little wider, that he has, altogether, other powers to deal with than the single-handed captain and his *two* mates whom he left behind him in the Calcutta wind bag; two mates, also, whose sympathies from various errors on all sides, are as frequently before the mast as abaft it.

However dull our Jack may be at reasoning, his instinct shows him as certain as death that he has got into the wrong place for any hanky-panky tricks; for there are at least a dozen well fed officers of various grades to be gone through, without even a look at the captain.

Hé hears, moreover, no bad language, no unnecessary yawling and bawling, which is so often a sign of conscious weakness; and which, dull though he may be in many things, he is quick enough to discover. So strong an impression has the general decorum, and order, and apparently concealed power, upon him, that from a swearing, dissolute rowdy, dressed like a superannuated dustman, he comes to the front on a Sunday morning as a civil and obedient seaman, dressed in his trim guernsey and gold-lettered cap, ready to toe the line at divisions before proceeding like a reformed pirate to Divine Service. The day the ship left the docks he was ready to fight with the first officer he saw; but all in one short week or less, he is the deformed, transformed; and all without even a word or a blow.

There is a well-worn proverb that "God helps those who help themselves," and the same may be said of Governments. A Government can do much, but not everything. If people will endeavour to help themselves a Government will assist them; and commanders and shipowners can do very much more than they have been doing lately to help themselves out of this trouble of mutinous seamen. Let them, to begin with, carry a stronger after-guard; it

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can be done at no increased outlay of money, or indeed, if any, so small, as to well recompense them for the trial.

Every sailing ship trading to India or round Cape Horn carries, or ought to carry, three officers, a carpenter, boatswain, a cook, a steward, and four apprentices. With such a number the captain finds himself surrounded by eleven officers, who ought to be, and would be, by a little careful tact and judgment, always at his back in any dispute with his men. Indeed, with such an exhibition of force, there would be but few causes for disputes, for the men would go about their duties with the assurance that if they did not there was power enough to compel them. And, instead of having so many separate messes for victualling, let the petty officers and the apprentices take their meals in the cabin, at the second table, along with the steward and cook. Such a scheme might cost a trifle more on the victualling sheet, but would thoroughly repay the owners. It is probable that the system of victualling has much to do with disorder and mutiny on such voyages, for it is well known that in many ships the officers themselves have as much cause for complaint in this direction, as the men forward. Ten years ago there were many shipowners, and possibly there are some now, who victualled their ships in anything but a generous scale. The cheeseparing system had got to such an extent that native butchers, or baboos in India, wrote home soliciting their favours, and cutting under each other to such an extent that it was absolutely impossible for the captain and his crew to live upon the supplies which these scoundrels sent on board. To be a little more correct, they kept the captain in countenance by starving his men or supplying them with the very worst provisions in the market; and yet shipowners would not understand why the men ran away on reaching a foreign port. The ships on leaving England, as has been said, were not provisioned as they should have been. Take as an example one article: 25 lbs. of butter for a voyage of twelve months amongst five people, and special instructions to the captain that it was expected as the ship was provisioned for twelve months no outlay for stores would be made abroad.

Independently of this, his pay was so much a month and a bonus, if his disbursements were satisfactory; the bonus being, in fact,

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nothing more than a part of his hardly-earned salary. It need not be said that this man was afraid of sighting St. Helena on his passage home, in case his crew or officers demanded to be taken in; for by the time he was so far on his journey, he had got to the bottom of his bread locker, and his two last casks of beef were in sight.

Some people are fond of saying the good old times were all nonsense; well, perhaps they were, but they were times when St. Helena was as anxiously looked for by the captain as by his crew; and when a good round sum was spent in provisions, to keep that crew in health and spirits and in good humour. It is right that the laws should be strong, and that captains and owners should be thoroughly and most efficiently supported in carrying out their adventurous business very much more than they have been; but it must be confessed that if their ships had been better provisioned—if they had been provisioned even fairly and honestly up to the very meagre Government allowance, we should have heard much less than we have during the last ten years of the insubordination of seamen.

Let us take even the Government allowance and examine it. What is it? It may not read very badly upon paper, but it is very far short of what it ought to be in ships belonging to men who live in great mansions on the borders of large cities, and who are surrounded with all the luxuries of princes. There are no agricultural labourers, possibly, in any part of England, who fare so poorly as British seamen in long-voyage sailing ships. Their breakfast—say in cold winter weather, off Cape Horn—is composed of the weakest of coffee and dry biscuit; dinner of fat pork and pea soup, which is perhaps not so bad if the pork were a little less fatty; tea, water-bewitched, and dry biscuits again—breakfasts and teas always of this description; but the following days' dinner is a pound and a half of beef, salt and hard, and something which the cook calls *pudding*, which has probably had as much to do in killing off all sailors at forty years of age as any other distemper.

There is no reason whatever why our shipowners should not feed their crews as liberally as the Americans do, for they make more money, in proof of which they have all but driven the latter



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off the sea. The Americans give their sailors all that we give ours, with the following additions: For breakfast, ground Indian corn, made something like porridge, and treacle with it. For dinner, boiled beans with their beef; and baked, with their pork. For supper, potato hash, with the remains of beef from dinner, minced up in it. All these additions are cheap, wonderfully cheap, in the United States, and very little less costly with us. Why, Indian corn is given to pigs in this country, after paying freight across the Atlantic. It is astonishing, too, what a very cheap mess beans are, and how very nourishing and palatable. It is really high time that some improvement was made in the victualling scale of seamen—the half pound of beef, and the quarter of pork knocked off the allowance as it stands, would amply repay for the additional vegetables. Now, when it is remembered that the officers in many long voyage ships fare little better than the men, can it be very much wondered at that there should be so much trouble and dissatisfaction in British ships?

Feed your men well, treat them decently, work them fairly hard, let them see that you have force at your back to carry out your orders, and you will soon have a good deal less of insubordination. It will vanish. As to the petty officers feeding in the cabin at the second table, why not? It would rather *strengthen* than affect discipline in any other way. There are few passengers carried by such ships now-a-days, therefore it cannot be said they would be in the way by such a method. To keep economy in view, they would eat up many things which otherwise would be thrown overboard, for a multiplication of messes means a multiplication of waste under the best purveyors.

In concluding this paper, it may, perhaps, just be worth while asking why, if British subjects are so uncontrollable in the Merchant Service, they are not found so in the Royal Navy, or in the army, that is to say, worse than they ever were. It is not intended to hint that they are not insubordinate in nearly all long-voyage sailing ships, for it is too well known by those who have much to do with them that they are, and very much worse than they were forty or fifty years ago.

A SHIPOWNER AND CAPTAIN.

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## THE PANAMA CANAL.

IN the *Shipping and Mercantile Gazette* of the 17th November of last year, is an article in which the writer confirms the statement made in a former number of the *Nautical Magazine* on the sanitary condition of the Isthmus, and clearly proves that the "life a sleeper" theory is a pure invention. Figures and facts are difficult to controvert, and we are informed on the authority of Her Majesty's Vice-Consul that in a working party of 8,000 persons the percentage of sickness is 14·3 per cent., and the mortality from all causes 25 per thousand, or 2·5 per cent. When the nature of the work and the consequent exposure are fairly considered, the small death rate is remarkable, clearly indicating that unusual care has been shown in perfecting the sanitary arrangements. It would be interesting to ascertain what percentage of those who were invalided died *en route* to Europe or America, for it is well known that the most virulent stage of the Colon fever occurs after the patient has left the country. I am unable to state from personal experience if the Jamaica negro suffers after leaving in a similar manner to men of European race, but while on the Isthmus he occasionally turns blue-black under attacks of fever and ague. These men are good workers with the shovel and barrow under all circumstances on shore or afloat, yet no inducement is sufficient to make them carry a package of any description on their backs. They are considered to be the greatest ruffians and the most foul-mouthed of the negro race, an impeachment which those who are familiar with them will not be inclined to dispute. Their quarters are like the Irish in American cities, quite distinct from the general run of workmen, with whom they never mix, rarely acquire their language, or intermarry. Throughout the West Indies, from Barbadoes to Jamaica, the coals are carried on board in small baskets by women, the filling being done by men.

The natural features of the Isthmus, as well as the climate, present considerable difficulties to the carrying out of the great work.



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The raising of the gigantic dam at Gamboa, between the "Cerro Cruz" and the Cerro Obispo, will involve immense labour and the exercise of no mean engineering skill. The length is, according to the *Shipping and Mercantile Gazette*, 2,600 feet, height, 100 feet, and it will bank up 660,000,000 cubic metres of water. The cost of this portion of the work will be prodigious. The materials may be brought to the spot by mechanical appliances, but hand labour must in the actual erection play a more important part than machinery. To judge by the preliminary report, this necessary adjunct of safety was not thought of until after the estimates were framed, and the work in hand. The contractor who has undertaken to carry out this part of the enterprise has need of all his acumen to prevent himself from playing a losing game. The native workmen have a pace of their own, and will not move beyond it if an earthquake were on them. Colon and its wharfs are built on the wrong side of the bay, and feel the full effect of the tremendous northerly swell which occasionally rolls in during the autumn months. Ships cannot then lie at the wharves without imminent danger, and in order to be prepared sailing vessels should have a cable out on end to haul out and ride by. Steamers, on the advent of a "norther," generally anchor in Puerto Cabello, about 15 miles to the eastward of Colon, where neither wind or sea can reach them. If too light to steam off the land, there is fair anchorage on the west side of Colon, and from the report it appears the new mole has been run out from that shore, thus forming an efficient protection to the shipping under every condition of weather. It must not be imagined that the able engineers who carried the railway over a region amidst great difficulties, financial and otherwise, were ignorant of the advantages offered by the west shore of the bay. Colonel Totten informed me that their limited resources compelled them to start from the deep water side, but the first idea was to make a port by dredging the creek to the eastward of Manzanilla Island. It appears from the report of H.M. Consul, that M. de Lesseps at once saw the advantage of this plan, and vessels are now discharging their cargoes where heretofore was a shallow lagoon. The "northers" seldom blow home with violence more than

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once or twice a year, and the season sometimes passes without one. The knowledge, however, that they may come, keeps everyone on the alert on shore and afloat, for they give but little warning of their approach. In most cases the premonitory signal is a ground swell, and the height to which this rises later on cannot be imagined by those who have only passed over the bay in ordinary weather. Fortunately the wind does not blow with similar violence, or Colon would long since have been destroyed. There are well-authenticated instances of islands on this coast being washed away under the combined influence of the wind and sea of a norther. Low as the mountain ridge is which runs through the isthmus, it effectually forms a line of demarcation in climate between Colon and Panama, notwithstanding the distance across is only 47½ miles. This ridge forms a barrier which the rains pass with difficulty. The squalls rise on the Atlantic side of it, and following the course of the Chagres inundate the country on their path to the sea. They are not attended with much wind, hence it is the custom of merchant ships at the wharf or in the bay to keep their sails loose. If furled for a few days they become covered with black spots of mould which remain permanently set in the canvas. Ships which have to remain during the rainy season should, as far as practicable, unbend sails and unreeve running rigging. Owing to the excessive humidity on the Atlantic side its sanitary condition is immeasurably inferior to that of the Pacific. It is not possible to permanently reside near the former without suffering from fever and ague, but in Panama this is not the case, although it is admitted that the fevers of the latter, though rarer, are of a more dangerous type. Unfortunately the European constitution never becomes sufficiently acclimatised to prevent a recurrence of attacks at either place. In this particular it is more harassing and in the end often more dangerous than the yellow fever, which seldom or never attacks an individual if he remains permanently in the locality where he contracted it. But a change, say from the Havana to Vera Cruz, will occasionally induce a return, although generally in a milder form. In the latter city no one is safe until he has had the "vomito." During my stay the Prussian Consul, who had resided there for fifteen years in robust health, was attacked and died on the third day. It

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excited no surprise amongst the old stagers, who simply elevated their eyebrows and said "it was bound to come." Notwithstanding the sanguine temperament of M. de Lesseps' statistics, experience must have convinced him and the shareholders that the site of his new work is scarcely adapted for a sanitarium for Manuellita to recruit. It is not surprising that such a gifted man, with the prestige, and, what to his audience was of more consequence, the financial success of the Suez Canal to quote from, should have given free scope to his imagination when essaying to float a work of greater magnitude. The true difficulties are now showing themselves, and he will be fortunate if strikes do not add to those of nature. M. de Lesseps works for fame, his labourers for dollars.

The tide at Panama has a rise and fall of fourteen feet; and at low water there is a wide extent of reef bared for a considerable distance from the shore. All that is above water can be quickly removed; but if the rocks shelve easily to deep water, the blasting of a ship channel for low water will be a work of unusual difficulty and expense. American engineers with all the resources of science at their command have not yet cleared the Hell Gate barrier leading into New York from Long Island Sound. At present ships discharge or embark their cargoes by means of lighters, which at tide time come up to within an easy distance of the railway depot, but it will never do to keep fleets of ships waiting for high water. It is probable this part of the work will, in the remote future, be embanked on both sides and ultimately covered with the stores and workshops of the Company. But beefore it is realized, many millions must be added to the present moderate estimates, a large portion of which will be expended in what a friend terms "scratching the ground." Before the commencement of the railway, the name of Colon attracted little attention, Chagres being the *point d'appui* of the gold-miners who swarmed over the Isthmus *en route* to California. Until the route round Cape Horn became a success, new Panama continued to flourish; but from the middle of the eighteenth century up to the date of the discovery of gold in California, its trade almost ceased to exist. Since that time it has started into new

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life, and the fact of the Grand Hotel realizing £40,000 indicates in an unmistakeable manner the increasing value of property.

The United States will be the great gainers by the construction of the new waterway. The distance from New York to Sydney *viâ* Cape Horn is 12,870 miles; *viâ* Panama, 9,950, a saving of 2,720 miles; to the Sandwich Islands, by the same routes, 13,560 miles and 6,800 miles respectively, a saving of 6,760 miles; to Hong Kong, 17,420 miles and 11,850 miles, a saving of 5,570 miles; to Jeddo, Japan, 16,710 miles and 10,220 miles, a saving of 6,490 miles. England to Sydney, *viâ* the Cape of Good Hope, is 12,828 miles, and *viâ* Panama will be 12,730 miles; consequently the old route for sailing ships will be preferred. Unless the United States open their coasting trade to the ships of other nations, not a likely contingency, this country will not, therefore benefit to any remarkable extent. A company a few years since established a fast line of steamers from New Zealand and the Australian Colonies to Panama. On arriving at the latter, passengers and cargo were transhipped to the Southampton Royal Mail Steamers *viâ* the railway. This was soon given up, for the direct trade would not pay, and there were no feeders on the route to add to it. All things considered, there is not much fear of the eastern route being interfered with to any appreciable extent. But the western parts of North and South America will be great gainers. Let any one take a glance at the map, and note the weary route our grain and coal ships have to take to reach any of the emporiums on a line of sea board extending through some 90° of latitude. The whole of the coals for the Pacific Steam Navigation Company go round the Horn, the freight across the Isthmus being too high to permit their transit by rail. The new route will, therefore, save a run of 94° of latitude, without allowing for the chances which not unfrequently drive a sailing ship to 60° S. In round numbers the saving by latitude alone will amount to 6,000 miles.

The Panama Canal will not affect the general sailing trade to such an extent as the Suez Canal did the Eastern, for that cannot be utilized for a sailing ship. Putting the Canal itself and the Red Sea beyond the pale of discussion, it was not uncommon to find the passages from the eastern ports of the Mediterranean to

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Gibraltar extending to eighty or ninety days, and on reaching the latter the strong easterly current setting through the Gut, has been known to detain them six weeks at anchor under the Rock. A quarter of a century since it was an interesting sight to stand on Europa Point after the prevailing westerly wind had been replaced by the "levanter." From both sides of the Straits, fleets of ships of all nations hurried to take advantage of the favourable change to get beyond the influence of the troublesome indraft. Occasionally a calm or a shift of wind would drift many back to leeward of their original anchorage, and the weary task would commence afresh. The run under canvas from the ports on the Atlantic coast of America, or from Europe to Colon, is in a very great measure over a fair wind track. Before steamers were placed on the route from New York, the clipper brigs and barques of the Railroad Company occasionally made the passage south in a week. The return was more tedious, especially when the trades did not blow home, and the southern portion of the Caribbean Sea was vexed with calms and light or variable winds. The approaches to Panama are often difficult from a similar cause, but the sea being smooth an ordinary tug-boat will without difficulty tow the heaviest grain ship to an offing. It is tolerably certain such service will not be required for many years, notwithstanding the roseate predictions to the contrary. The capital already raised is alleged to be exhausted, and great as the reputation of M. de Lesseps deservedly is, he will be compelled to draw severely on it to sustain the enthusiasm of the shareholders. It is doubtful if political economy will acknowledge the financial soundness of paying dividends on the subscribed capital for works which must before completion absorb untold millions.

The promoters of the Nicaragua route have almost dropped out of sight since the United States Government very wisely refused to guarantee the proposed loan of three millions of pounds asked for. It is amusing to read that the State of Nicaragua is trying to secure the co-operation of Honduras, Costa Rica, and other defaulters to guarantee the interest of the amount, but the great bankers and their clients are not likely to swallow the bait a second time, while recollections of the Honduras railway and similar defalca-

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tions are fresh in their memory. The rich "backschish" which the officials of New Grenada are exacting for police rates and other duties makes the mouths of their less fortunate neighbours water as they contemplate the spoil. It is to no purpose; not even the name of General Grant can galvanise an impracticable scheme into a success. The key of the enterprise has been seized by the great Frenchman, who above all men seems best adapted to bring it to a successful issue, not only from his individual qualities, but from the confidence he is able to inspire in the breasts of his shareholders and coadjutors. When completed, the statue of Columbus, which during my visit was lying on the foul foreshore, should be erected on one of the piers of this new gate of the Pacific and that of M. de Lesseps on the other. Both are names on which, by the general voice of civilized nations, immortality will rest. Each in defiance of the opinions of the leading men of their times believed that the apparently impossible was possible, and in their efforts to promote a great object put up with rebuffs and disappointments which would have daunted men of less heroic mould. But success came at last, and it is at least satisfactory to know that one during his lifetime has received the honours and fame to which, by the greatness of his works, he is so well entitled.

W. W. KIDDLE.

## SUNDA STRAIT.

THE following notice has recently been issued by the United States Hydrographic Office, dated November 7th, 1883:—

The following extracts from the report of Commander P. F. Harrington, of the U.S. steamer *Juniata*, will explain the condition of part of the Straits of Sunda, affected by the recent earthquake:—

"Passing into the Inner or Dutch channel, September 7, near the Menschen Eter, the ship was kept westward, sounding carefully, and at night anchored in lat. 5° 53′ S., long. 106° 12′ E.,

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among numerous fishing stakes not noted upon the charts. On the following morning soundings were resumed on a line from the anchorage to Saleira island, and thence around St. Nicholas point to Toppers island.

"The trees and hills in the vicinity of St. Nicholas point are covered with ashes, but I am satisfied, from the bearings taken and soundings made, that there has been no physical change in those parts.

"From Toppers island the ship proceeded to the southern end of Thwartway, and beginning three cables eastward of the reef at that point, passed around the island at distances of two to four cables sounding, and with the steam-launch sounding inside and upon the bow. Through the valleys of the island the sea appears to have rushed, tearing away the trees and leaving the land in several lines low and naked. When seen from the northward and eastward, or southward and westward, and at a distance of three or four miles, these breaks in the line of verdure cause the appearance of five islands, but there is no change in the shore contour of the island, nor in any of the soundings adjacent.

"On the afternoon of the 8th instant the ship anchored off the site of Anjer. The buoys which mark the line of the submarine cable to Telok Betong, Sumatra, and the base of the lighthouse at Fourth point, are the only monuments of Anjer. The plain northward of Anjer peak was swept by the flood of waters, and nothing remains but the vine-like roots of the cocoa palm and some scattered and ghastly relics of the inhabitants. The coast line about Anjer point and the bank of soundings are not changed.

"At three o'clock on the afternoon of the 9th instant, twelve days after the earthquake, the *Juniata* was brought to anchor near the east point of Lang island, in twenty-five fathoms of water. I went with the steam-launch and cutter to examine the Krakatoa channel. Upon the approach of the ship the volcano appeared active. A nearer view in the boats proved that the appearance is due to scoria falling down the precipitous heights and blown into dust by the wind.

"On entering Krakatoa channel, some of the changes caused by the earthquake became apparent. The north-western part of

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Krakatoa island has disappeared. The line of fracture begins at a point south of Lang island, and forms an arc of a circle passing through the peak to the western side of the island. The boats passed into the crater-like area, concave to the northward, and sounded along the face of the heights, but no bottom could be found with 20 fathoms of line. Prior to the eruption, Verlaten and Lang islands were covered with trees, and, refreshed by the rains of the south-east monsoons they presented a most pleasing view. With one slight exception these islands remain unchanged in contour, but both are covered with scoria. Eastward of Verlaten island a small island has formed. . . . . Small necks of land have been thrown out from the eastern side of Verlaten, and the western point of Krakatoa. . . . . The Polish Hat has disappeared, but a new rock about 20 feet in height, and as many in diameter now exists in Krakatoa channel, near to the southern point of Lang island. Within ten yards of this rock there are eight fathoms of water. At the place formerly occupied by the Polish Hat no bottom was found with 20 fathoms of line. Islands and reefs have been formed in the Bezee channel, the extent of which I was unable to fix. . . . . Cutters were sent later to examine and fix the new islands in Krakatoa channel and the eastern island in Bezee channel. The southern end of the latter was approached by the cutter, steering about E. by N. At a distance of about 1½ miles bottom was found in eight fathoms, and at a distance of half-a-mile, three fathoms, hard bottom. Towards the southern end of the island farther progress was barred by a reef and breakers. The boat then skirted the western side of the island, but was unable to approach nearer than a quarter of a mile. From the northern end of this island a reef extends in a north-westerly direction, apparently connecting with the islands farther westward. Enough has been learned to mark the pass as worse than useless for the present.

"On the 12th inst., I examined the coast of Java between Second point and Fourth point, taking bearings and soundings continuously. . . . The whole coast near the sea has been swept clear, but no changes in the coast line and soundings have been found by the *Juniata*.

"Communication with Telok Betong is now interrupted by

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masses of floating pummice wedged in Lampong bay. . . . The depths in other parts of Bezee channel have probably been materially altered. That part of Krakatoa which is missing, an immense mass, apparently occupied the place of the crater, and portions of it have probably made other modifications to the northward."

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## THE BOARD OF TRADE AND THE LOAD-LINE.

THE following important circular has been recently issued by the Board of Trade :—

Board of Trade (Marine Department),
Whitehall Gardens, S.W., 12th December, 1883.

LOAD-LINE.

SIR,—I am directed by the Board of Trade to call your attention to the enclosed memorandum on the subject of a load-line for merchant ships.

Under the circumstances stated in this memorandum it appears to the Board of Trade to be time to take a further step, and they propose to submit to a departmental committee, consisting of representatives of the public and of the interests concerned, the following questions :

1. Whether it is now practicable to frame any general rules concerning freeboard, which will prevent dangerous overloading, without unduly interfering with trade.

2. If so, whether any, and which, of the existing tables, with any, and what alterations, or any other and what tables should be adopted.

3. How far any such tables can be adopted as fixed rules, and what amount of discretion must be left to the officers who have to see that they are complied with.—I am, Sir, your obedient servant,

T. H. FARRER.

To the Editor of the *Nautical Magazine*.

MEMORANDUM ON LOAD-LINE FOR MERCHANT SHIPS.

From the time of the appointment of the Unseaworthy Ships Commission to the present time, the question of overloading has

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been prominent, and has engaged the constant attention of the Board of Trade. When Parliament thought fit to invest the Board of Trade and its officers with the power of detaining unseaworthy ships, it became their duty to detain ships which appeared to them to be dangerously overladen. In doing this, it was desirable, if possible, to act on certain principles, and it has been the constant endeavour of the Board to arrive at such principles, and to procure the co-operation of the shipping interest in so doing.

In 1875 they invited the Committee of Lloyd's Register, which so largely represents the shipping interest, and the Committee of the Liverpool Underwriters' Registry, to appoint a committee consisting of representatives of the two registries and of the Board of Trade to consider the question of load-line. That Committee, after holding several meetings, broke up, because the representatives of Lloyd's Register could not agree with the Liverpool representatives upon the elements of the question to be discussed.

In the meantime, it was necessary for the Board of Trade to act, and, as their officers required instructions, a certain set of tables of freeboard were prepared, which have been the subject of much misapprehension. They were not, as has sometimes been supposed, hard and fast rules, nor were they prepared or used as final decisions of the Board. They were not in the first instance even promulgated or published, but were given to the staff of the Board as tentative rules, and as points of departure, in the application of which to particular cases the officers of the Board were desired to use their own judgment.

But the difficulty which is inseparable from the exercise of a discretionary power, and which has been experienced by the Board of Trade in many other similar cases, soon arose. Complaints were made of the discretionary powers of the Board's officers, and shipowners expressed their desire, not only to know what were the principles on which these officers acted, but to have those principles made definite in their application, so that they might be able to know before loading, whether their ships would be detained or no. This desire appeared to the Board reasonable, and although the difficulties of preparing fixed rules of freeboard remained as great as before, the Board did their utmost to comply

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by issuing to the trade the tables above referred to. But in thus complying with the desire of the trade, the Board did not issue these tables as final conclusions: on the contrary, they expressly invited that criticism which has been so abundantly given.

A further step in the same direction has been taken by the Committee of Lloyd's Register, in issuing a set of tables prepared by their own officers. These tables were also issued as tentative, and not as hard and fast rules, and although, as might be expected in rules issued by a body which largely represents the shipping interest, they have been less hostilely criticised by members of that interest than the rules of the Board of Trade, they have not met with universal approval.

Under these circumstances, it appears to the Board of Trade that it is time to take a further step, and they propose to appoint another departmental committee to consider this subject.

In doing this, it is scarcely necessary to insist on the difficulties of the question, or on the various points which will have to be taken into consideration. But it may be useful to advert shortly to one or two points of importance.

So long ago as 1870, a report of the Council of the Institution of Naval Architects was presented to Parliament, containing a strong recommendation that a certain minimum freeboard should be required; what that freeboard would be, is shown by the following paragraphs of that report.

*Extract from Parliamentary Paper*, 157-1870, *referred to above.*

* * * *

*Freeboard.*—"There is a minimum height of freeboard which cannot be safely reduced in sea-going ships of ordinary fitment, and it is desirable to fix this minimum height. Freeboard should be understood to be the vertical height of the upper surface of the upper-deck (not spar-deck) at the side, amidships, above the load-water line. The proportion of freeboard should increase with the length. One-eighth of the beam is a minimum freeboard for ordinary sea-going ships of not more than five breadths to the length, and 1-32 of the beam should further be added to the freeboard for each additional breadth in the length of the ship; this would give:—

"'For a ship of 32 feet beam and 160 feet long, 4 feet freeboard.

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"'For a length of 192 feet, 5 feet freeboard.

"'For a length of 224 feet, 4 feet freeboard.

"'For a length of 256 feet, 7 feet freeboard, the beam remaining the same, but, as the addition of a spar-deck on long vessels may be considered an equivalent or substitute for the increased freeboard required for extra length, a complete spar-deck would leave the freeboard of these extra lengths at the original height of 4 feet.'

*Poops and Forecastles.*—"It is not considered desirable to offer any recommendations with regard to poops and forecastles. It must depend entirely upon the professional judgment of the designs of a ship, whether, looking to her proportions, form and purpose, the additions of poop and forecastle are expedient and safe. In general, where poops and forecastles are adopted, they should be closed and seaworthy, but their weight may be inexpedient in long fine ships, and there are cases where a light topgallant forecastle (*i.e.*, an open forecastle raised above the level of the upper-deck) may be useful in keeping heavy seas out of the ship. In general, spar-decks in long ships are preferable to poop and forecastle, and no diminution of freeboard should be allowed for a poop or forecastle."

The above passage is important, since it shows what is the freeboard which a few years since an important scientific body considered necessary for safety. That freeboard starts with four feet as a minimum freeboard for ordinary merchant ships, and in spar-decked ships would require the whole height of the space between the main-deck and the spar-deck to be added to the minimum of four feet. The freeboards deemed then necessary by this body are so greatly in excess of the present practice of shipowners, or of anything that has ever been required of them, as to show either that the Institute of Naval Architects at the time they made their report was altogether at variance with the practice of the trade, or that the freeboard in actual use has greatly diminished in the course of the few years during which the question has been under discussion. In either event, the difference above referred to illustrates the difficulty of the subject.

It must be remembered that this question cannot be regarded

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from a shipowner's point of view alone. If the interest of the shipowner in bringing home his ship safe were in all cases such as to make that his first object, no legislation and no rules would be necessary. But, under the present state of the law, this is not the case; and the interest of the public, and of the men whose lives are at risk, will be sacrificed, unless the rules are such as to compel the reckless and ignorant to do that which they would not otherwise do. Any rules which are founded on the experience of the inferior class of shipowners will be an evil, and will lower instead of raising the standard.

In the case under consideration, this primary difficulty is much increased by the number of varying data which have to be taken into consideration. Thus the dangers from overloading may be stated to include the following, viz. :—

1. The decks may be swept by the sea and the crew washed off.
2. The sea may pour on to the deck faster than the freeing ports will relieve it, and get into the ship through hatchways or other insufficiently protected openings.
3. The ship may be so heavy that a very slight addition to her weight may sink her.
4. The ship may be deficient in stability.
5. The ship may be too weak in construction to bear the strain of heavy cargo.

The dangers above referred to vary according to many varying causes besides the mere depth of the ship in the water. All the following are different factors which have to be taken into consideration :—

1. General form and size of ship.
2. Form of the ship below water.
3. Form and construction of deck.
4. Strength of the hull.
5. Construction and strength of hatchways and all other deck openings.
6. Means of escape for water on deck.
7. Nature as well as weight of cargo.
8. Relative position and stowage of different parts of cargo.
9. Nature of voyage.

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10. Probable weather or voyage, remembering that the seasons differ in different parts of the world.

Out of these, the first six alone can be known when the ship is built. The last four differ from time to time, and any rule as to load-line must be so made and applied as to vary accordingly.

Thus it is obvious that the number and variety of the dangers to be avoided, and of the different factors to be taken into consideration, make the compulsory determination of load-line one of very peculiar difficulty. And the difficulty is made more formidable by the important consequences which will arise from any mistake. If the load-line is fixed too low, it is a serious detriment to the carrying powers of British ships. If fixed too high, it is a legislative sanction of a dangerous practice.

Board of Trade, 21st November, 1883.

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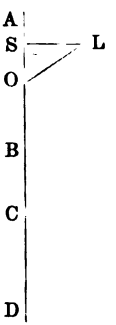
## NOTE ON THE CORRECTION OF SOUNDINGS.

ON a vertical line A D, let A denote the high water nearest to the time of cast, B that of the corresponding low water, C the height of low water of ordinary spring tides, and D the sea bottom; then D C is the depth marked on the Admiralty Charts. If now S L be the level of the sea at the time of sounding, C S is the correction to be subtracted from the depth D S given by the lead line.




Bisect A B in O, and suppose a circle A L B described on A B as diameter.

Now D C = D S − C S, and C S = C O + O S.

But C O is the half-mean spring range (R) at the place, and O A = O L = r is the height above half tide on the day of the cast. The angle A O L = T is the time from high water, and O S = r cos T, therefore the correction is

R + r cos T, if S L is above O ... (1),

and R − r cos T, if S L is below O ... (2).



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In practice T varies from 0 to 6 hours, and since in this case 6 hours equals 180°, one hour equals 30°. The expression (1) for the correction holds good so long as the time from high water is not greater than three hours, and (2) holds good for values of T between three and six hours.

The formula (1) remains unchanged, except in magnitude, whatever be the relative values of R, r, and r cos T, but formula (2) admits of some special cases. Observing that R is constant for the same port, and refers to *ordinary* spring tides only, it is obvious that in some cases we may have r greater than R, when the soundings are taken near low water of an extraordinary spring tide, so that both R and cos T have a maximum value; in which case R may equal r cos T when the correction vanishes, and S coincides with C. Or, we may have R less than r cos T, or S may be below C, when the whole correction will have to be added to the depth given by the lead line.

The value of R for most of the principal ports is given in the Admiralty Tide Tables, and the value of r cos T may be found approximately from Table B of the same work. As Table B often requires the use of troublesome interpolations by candidates preparing for examination, the following method by the more familiar Traverse Table may be preferred.

Multiply the time from high water (T), expressed in hours and decimals of an hour, by 30 for the degrees of a course, and with the height above half tide (r) as a distance in inches, the corresponding value of r cos T will be found in the column of Diff. Lat. of Table II.

THOMAS DOBSON, M.A.

Winterbottom Marine School, South Shields,
12th November, 1883.

[We have always pleasure in publishing communications from Mr. Dobson, but we desire to say that, although the foregoing is no doubt a perfectly original rule so far as Mr. Dobson is concerned, yet the method indicated, viz., to find the correction by means of the Traverse tables instead of by the Admiralty Tide Table B, has been in use for some years.—ED.]

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## OAMARU—NEW ZEALAND.

AMONG the rising ports of New Zealand, Oamaru may be classed as the most conspicuous, not only from its advantageous position, but from the energy of its inhabitants in promoting everything that tends to the safety and accommodation of shipping. Timaru is a rival, but it has not yet the advantages of Oamaru, as will be seen from the annexed description sent us by a correspondent.

The port of Oamaru is situated about 50 miles north of Port Chalmers, and is the natural outlet for a very large extent of fertile, agricultural and pastoral land, extending far into the interior of the province of Otago. Large quantities of cereals are grown in, and exported from the district to the Australian colonies and Great Britain, and many wool ships leave for London every season, which have received their cargoes in this port. There is also a large and increasing export of a very beautiful white stone, which exists in great abundance in the neighbourhood, and which is extensively used for building and decorative purposes in New Zealand and the neighbouring Colonies. Sheep are fattened in large numbers all over the district, and form a considerable proportion of the supplies which have lately given such great satisfaction to the consumers of mutton in London and elsewhere.

The harbour is now perfectly safe, being enclosed by a substantial breakwater and mole, and sheltered from the strongest south-east winds by a bluff headland, named Cape Wanbrow, on which there is a lighthouse and signal station. The area enclosed within the structure measures about 65 acres, with a depth of 18 feet 6 inches at low water, and 23 feet 6 inches at high water. There is a powerful dredge at work deepening the harbour and making berths for vessels to a depth of 25 feet at low water; this dredge is built to serve as a tug-boat when required. The entrance is 400 feet wide, and is overlapped by the breakwater 350 feet, so that ships entering or leaving the port do so in still water. A sum of



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£300,000 has been expended in carrying out these works. It is generally admitted that this money has been judiciously expended, the works having been a thorough success. No casualty of any kind has occurred to shipping for the past twelve years; it has, therefore, every right to be considered a perfectly safe harbour; local insurance companies rank it with other first-class New Zealand ports in so far as rate of premium goes.

The extent and excellent quality of the land comprised in the large district of which it is the outlet, will rapidly increase the exports and imports; it is expected that in a very few years a large shipping business will be the result. The harbour is handsomely endowed by grants of land, which will enable the board, as its value increases, to make the dues very low. There is one advantage which Oamaru Harbour possesses over many others, viz., *it has no bar*. When the breakwater is passed, vessels leaving the port are in the open sea.

The port is connected with the railway system of the Middle Island. Cargo to or from all parts of the island can be received or discharged into the railway trucks alongside the ships.

Arrangements have been made to lay on a direct steamer from London, 3,800 tons burthen, to load frozen meat, &c., and it is expected that safe and ample accommodation will be found for the loading of this vessel and any others which may follow.

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PILOTAGE.—*Scilly Islands.*—A licensed pilot cutter now cruises with pilots on board to the south-westward of the Scilly Islands. The cutter is distinguished by the usual marks and flag, and in addition carries Lloyd's burgee at the peak, and the word "Lloyd's," is painted on the weather-boards above her quarters. She has a supply of pilots on board for the Islands, and is authorized to report vessels and convey telegrams and orders from and to the shore at a fixed tariff.

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# CORRESPONDENCE.

## REPORTED SHOAL IN THE RED SEA.

*To the Editor of the "Nautical Magazine."*

DEAR SIR,—Supplementing Captain Stewart's letter in your current number on the supposed new danger in the Red Sea reported by the master of the s.s. *Gulf of St. Vincent*, in June last, I beg to say that its non-existence is confirmed by the reports of two more of our ships which carefully examined the locality in question. Captain Ashdown, of the s.s. *Siam*, writes us from Aden, October 18th,—"On my way home last voyage, I received a letter from the Aden agency stating that the captain of the s.s. *Gulf of St. Vincent* had reported a reef in the Red Sea, in lat. 23° 9′ 30″ N., long. 36° 55′ 30″ E. There is no reef in or near that position. At 3.30 p.m. of the 15th instant I passed over the exact spot, by careful observations with three chronometers, all agreeing, keeping a careful look-out, both from aloft and from the bridge, for two hours, but saw no signs of shoal-water. One of Holt's steamers was in company about two miles to the westward." The log-book of the s.s. *Ancoria* (Captain Chapman) of October 10th states—"P.M. Approaching the vicinity of shoal reported by Captain Brock, stationed hands aloft looking out for same. At 3.30 lat. 23° 6′ N., long. 37° 5′ E., observed water, apparently discoloured, on port-bow. On steering up to it found it to be a quantity of spawn.

"I imagine this may probably be what was taken for a reef—nothing else was seen."

I think Red Sea navigators may safely pursue their usual track in this locality.

I am, dear Sir, faithfully yours,

JOHN C. ALMOND.

Nautical Inspector P. and O. Company.

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## BOOKS RECEIVED.

*The British Navy; its Strength, Resources and Administration.* By Sir Thomas Brassey, K.C.B., &c., Vol. V.

We have noticed the former volumes of this work as they appeared. This part is entirely concerned with the question of "British Seamen," and is based upon a former work of Sir Thomas Brassey's bearing that title, which first appeared in 1877. A new chapter on recent legislation affecting the seamen has, however, been added, and the entire work revised and brought up to date by Mr. F. W. Haine, of the Board of Trade. The Merchant Seamen Act of 1880 is that which naturally demands most attention in this consideration. The abolition of the advance-note system, the provision giving the seaman a right to demand the allotment of his wages, are commented upon, as is also the new provision as to payment of wages, by which the owner or master is bound to pay the seaman at the termination of his engagement, either £2, or one-fourth of the balance of wages that may be due. The advantages of this arrangement are shown, and the other means taken of late years by the Board of Trade to prevent crimping are described, it being clearly proved that they have been most effective. The question of the food and accommodation of seamen is also gone into, and the present state of the law, as regards discipline in merchant ships, is described. Mr. Haine is evidently well acquainted with the whole subject, and the new matter he has introduced, grafted on the able work of Sir Thomas Brassey, renders this volume a complete handbook on the question of "British Seamen."

### Our Library Table.

*Notices to Mariners* and *Hydrographic Notices*, British and Foreign, in increasing quantities come to us month by month. They show the activity of the Hydrographic Departments of the various maritime nations. Navigators should look to these more carefully than they do, for it should never be said that the first

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establishment of a new light on any coast invariably leads to disaster; our "Nautical Notices" are collected and published to enable the navigator to keep his charts corrected to date, and to apprise him of all newly-discovered dangers.

The books, pamphlets, and papers on our table are as follow:—

The Meteorological Office is busy, and has issued during the month: *Report of the Second Meeting of the International Meteorological Committee; Sunshine Records of the United Kingdom for* 1881; *Meteorological Atlas of the British Isles; Hourly Readings of Instruments for* 1882; and *Quarterly Weather Report* (new series) for April to June, 1876; we shall have to refer to some of these more particularly in our next issue. The second number of *The Science Monthly* (London, David Bogue and E. W. Allen) contains valuable reading on the subjects discussed, and is about to be enlarged, giving monthly star maps, with notes for observers. *The Shipwrecked Mariner* (London, T. Fisher Unwin) for the quarter ending 1883 is, as usual, interesting in the variety of matter introduced into its pages, is carefully printed and well illustrated. The *Merchant Shipping Sheet Almanac* for 1884 has been compiled by N. Fitzgerald, Deputy Superintendent Mercantile Marine Office, Newcastle, and collects in a concise form much valuable information relating to ships and shipping, seamen's wages and money orders. Van Nostrand's *Engineering Magazine* (New York), for December, maintains the high position it has made for itself, and the subjects take an unusually wide range. The *Scientific American* (New York), is a valuable repertory of knowledge, keeping its readers well posted in the science of the day, and all the inventions and patents of the month. The *Bulletin de la Société de Géographie de l'Est* (Nancy), 3e trimestre, 1883, shows that the science of geography has a home in the provincial towns of France, as well as in the capital. The subjects discussed in this part are numerous. *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft XI., is always welcome, not only on account of the oceanic subjects on which it treats, but for its carefully compiled sailing directions. *Revue Maritime et Coloniale* (Paris), for December, contains, among other subjects, papers on meteorology and the

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stability of ships, together with propositions for the imp
the River Seine from the sea as far as Par
*General de Marina* (Madrid), for October, among oth
contains one on the Spanish Electrical Society,
documents relating to the history of the Spanish
last century, and a paper upon Recent Designs of Shi
*Marittima* (Rome), for October and November, contain
the series of papers on the Italian Royal Naval ex
review of a recent discussion at the United Service I
"Types of War Ships," a further instalment of the
Italian Naval Finance, and a very full and interest
Signor P. Rezzadore on *The Disasters in Ischia and*
description of the formation and topography of Ischia
be supposed, very complete, and we may add tha
more is told about the catastrophe in Java than has y
in any English account that has come under our
paper is illustrated by two good maps. *Mitth*
*dem Gebiete des Seewesens* (Pola), No. XI., among its
papers has a good article on the currrents of the Sou
with two capital illustrations. The latest numbers of
*Schiff*, *Le Yacht*, *L'Avenir Militaire*, *Forest and St*
the *New York Maritime Register*, *Nautical Gazette* (U.
*Pedro Shipping Gazette* are to hand.

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THE Board of Trade have awarded a binocular glass
James McQuarrie, master of the barque *Chinampas*, of
in recognition of his humanity and kindness to the
crew of the ship *Elleobank*, of Liverpool, twenty-four
he rescued from their sinking vessel on the 1st Au
latitude 57° S., longitude 75° W., and landed them at
on the 21st August. Sums of money have also been
the steward and the other nine men of the *Chinampas*
the boat which effected the transfer of the shipwrecked

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stability of ships, together with propositions for the improv... the River Seine from the sea as far as Paris. *...eneral de Marina* (Madrid), for October, among other ... contains one on the Spanish Electrical Society, ... documents relating to the history of the Spanish Navy ... last century, and a paper upon Recent Designs of Ships. ... *Marittima* (Rome), for October and November, contains ... the series of papers on the Italian Royal Naval expedi... review of a recent discussion at the United Service Insti... "Types of War Ships," a further instalment of the series ... Italian Naval Finance, and a very full and interesting pa... Signor P. Rezzadore on *The Disasters in Ischia and Java*. ... description of the formation and topography of Ischia is, as ... be supposed, very complete, and we may add that very ... more is told about the catastrophe in Java than has yet app... in any English account that has come under our notice. ... paper is illustrated by two good maps. *Mittheilungen ...dem Gebiete des Seewesens* (Pola), No. XI., among its diversi... papers has a good article on the currents of the South Atl... with two capital illustrations. The latest numbers of *Hansa*, ... *Schiff*, *Le Yacht*, *L'Avenir Militaire*, *Forest and Stream* (U.S.), ... the *New York Maritime Register*, *Nautical Gazette* (U.S.), and ... *Pedro Shipping Gazette* are to hand.

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THE Board of Trade have awarded a binocular glass to Captain James McQuarrie, master of the barque *Chinampas*, of Picton, N.S., in recognition of his humanity and kindness to the shipwrecked crew of the ship *Elleobank*, of Liverpool, twenty-four in all, whom he rescued from their sinking vessel on the 1st August last, in latitude 57° S., longitude 75° W., and landed them at Monte Video on the 21st August. Sums of money have also been awarded to the steward and the other nine men of the *Chinampas* who manned the boat which effected the transfer of the shipwrecked crew.

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# TIDAL CONSTANTS

## For Various British, Irish, and European Po

By applying the Tidal Constant of the place, according to
— *sub.*), to the time of high water on the given day at the port
have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −8 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 18 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 8 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 23 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbellton | −0 28 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth● | +0 33 | Devonport |
| Deal & Downs | +0 8 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 3 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 53 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | [illegible] | Dover |
| Holyhead | [illegible] | Liverpool |
| Holy Island | [illegible] | Shields |
| Honfleur | [illegible] | |
| Inverness | [illegible] | |

| Place. | Cons |
|---|---|
| Jersey (St. Helier) | + |
| Kinsale | − |
| Lerwick (Shetland) | − |
| Limerick | + |
| Lisbon Bar | − |
| Littlehampton | + |
| Llanelly bar | − |
| Lowestoft | − |
| Lynn & Boston Deep | − |
| Margate | − |
| Maryport | − |
| Milford Haven entr. | − |
| Montrose | − |
| Morlaix | − |
| Needles point | − |
| Newcastle | − |
| Newhaven | − |
| Newport | − |
| Nieuport | − |
| Nore | − |
| Orfordness | − |
| Oporto | − |
| Ostende | − |
| Padstow | − |
| Peel, Isle of Man | − |
| Pembroke Dock | − |
| Penzance | − |
| Peterhead | − |
| Piel harbour, Barrow | − |
| Plymouth breakwater | − |
| Poole | − |
| Port Carlisle | − |
| Portland breakwater | − |
| Port Patrick | − |
| Portsmouth | − |
| Ramsgate | − |
| Rotterdam | − |
| Santander | − |
| Scarborough | − |
| Selsea bill | − |
| Sheerness | − |
| Shoreham | − |
| Sligo bay | − |
| Southampton | − |
| Spurn point | − |
| St. Ives | − |
| St. Malo | − |
| St. Mary (Scilly) | − |
| St. Nazaire | − |
| Stornoway | − |
| Stromness (Orkneys) | − |
| Sunderland | − |
| Swansea bay | − |
| Tay bar | − |
| Tees bar | − |
| Tenby | − |
| Thurso | − |
| Torbay | − |
| Tralee bay | − |
| Ushant (Ouessant) | − |
| Valentia harbour | − |
| Waterford | − |
| Westport | − |
| Wexford | − |
| Whitby | − |
| Whitehaven | − |
| Wick | − |
| Wicklow | − |
| Workington | − |
| Yarmouth road | − |

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# MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 1 | England—South Coast—Shambles Light-vessel | Alteration in light and fog-signal. |
| 2 | „ S.E. Coast—South Foreland | Intended experimental lights. |
| 3 | „ River Thames Entrance—Long Sand Light-vessel | Distinguishing characteristic. |
| 4 | „ West Coast—River Dee, &c. | Alterations in December, 1883. |
| 5 | Irish Sea—Isle of Man—Port Erin | Uncertainty of breakwater light. |
| 6 | Ireland—South Coast—Fastnet Light-house | Explosive fog-signal. |
| 7 | „ „ Cork Harbour Approach—Daunt Rock | Light-vessel altered in position. |
| 8 | Sweden—Skagerrack—Klöfskär | New light. |
| 9 | „ „ Skafto Island — Ilandsberg | New light and leading lights. |
| 10 | Baltic Entrance—Kattegat—Ebeltofte Bay | New leading lights. |
| 11 | Baltic — Sweden — Kalmar Sound — Skagganäs | New leading light. |
| 12 | „ „ Gottska Sandö | New light on S.E. point. |
| 13 | „ Gulf of Finland — Gulf of Viborg | Four new lights. |
| 14 | „ Gulf of Bothnia—Åland Islands and Finland | New lights. |
| 15 | France—West Coast—Chaussée de Sein —Ar-men | New fog-signals at lighthouse. |
| 16 | Spain—Bilbao | Electric lights showing channel. |
| 17 | Mediterranean—Strait of Gibraltar—Tangier | Light on landing stage altered in colour. |
| 18 | „ Italy—Gulf of Spezzia | Channel east of breakwater closed. |
| 19 | „ „ Salerno | New harbour light on breakwater. |
| 20 | „ „ Naples—St. Vincent Mole | Buoy marking extension. |
| 21 | „ Sicily — Port Palermo Mole | Light-vessel marking extension. |
| 22 | „ Strait of Messina—Italy —Reggio | New harbour lights. |
| 23 | „ „ „ | Harbour lights altered in colour. |
| 24 | „ Adriatic — Lagostini Islands —Glavat Island | Provisional light. |
| 25 | „ Gulf of Volo — Palea Trikiri Island | Position of sunken rock. |
| 26 | Black Sea—Sea of Azov — Berdiansk | New lights. |
| 27 | Africa—West Coast—Grand Bassa—Waterhouse Bay | Sunken rock. |
| 28 | Indian Ocean — Seychelle Islands — Dennis Island | New light. |
| 29 | India—West Coast—Mangaloro | New mouth of river shifted. |
| 30 | Eastern Archipelago — Sumatra — Manna Point | Position of reef. |
| 31 | China Sea—Carimata Strait, &c. | Position of reefs. |
| 32 | Korea—S.E. Coast—Tikhmenef Point | Rock discovered. |
| 33 | Australia — N.W. Coast — Troughton Island | Reef discovered to eastward. |
| 34 | South Australia—Gulf of St. Vincent—North Spit | Marked by beacon. |

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MONTHLY ABSTRACT OF NAUTICAL NOTICES—*Continued.*

| No. | PLACE. | SUBJECT. |
|---|---|---|
| 35 | SOUTH AUSTRALIA—Port Adelaide River | Cutting thro' inner bar 150 ft. wide. |
| 36 | PACIFIC OCEAN—Tonga Island—Tongatabu | Shoal in harbour approach. |
| 37 | WEST INDIES—New Granada—La Hacha | New light. |
| 38 | „ „ Cuba—Port Caybarien—Francés Cay | New light. |
| 39 | UNITED STATES—Gulf of Mexico—Mississippi Sound—Merrill's Shell Bank | Light re-exhibited. |
| 40 | „ „ North Carolina — Cape Hatteras Beacon | Light re-estabiished. |
| 41 | „ „ Massachusetts — Gloucester Harbour | Automatic signal-buoy off east point. |
| 42 | CANADA — New Brunswick—St. John—Negro Point | Breakwater light re-established. |
| 43 | NEWFOUNDLAND—S.E. Coast—St. Mary's Bay—Lahaye Point | New light. |
| 44 | „ East Coast — Conception Bay — Bay Roberts — Green Point | New light. |
| 45 | „ Straits of Belle Isle — Cape Bauld | New light in August, 1884. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

1.—ENGLAND.—*South Coast.—Shambles Light-Vessel.—Alteration in character of Light and Fog-signal.*—With reference to Notice in 1883, on intended alteration in the character of the light and fog-signal on board the Shambles light-vessel; the light is now a *double-flashing half-minute white* light, showing two successive flashes in the following order:—A flash of *five seconds'* duration, an eclipse of *six seconds;* a flash of *one and a-half second*, followed by an eclipse of *seventeen and a-half seconds.* The fog-signal, during thick or foggy weather, will give *two blasts* in quick succession *every two minutes* in the following order:—A high note of *two and a-half seconds'* duration, silence *two and a-half seconds*, a low note of *two and a-half seconds*, followed by an interval of *one hundred and twelve and a-half seconds.*

2.—ENGLAND.—*S.E. Coast.—South Foreland.—Intended Experimental Lights.*—During the winter months, it is intended to exhibit some experimental lights at the South Foreland, in addition

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to the existing electric lights. Further notice, giving full details of the intended lights and the directions in which they will be visible, will be published in due course.

3.—ENGLAND.—*River Thames Entrance.—Long Sand Light-Vessel.*—Mariners are particularly cautioned to notice the character of this light, advertized in June, 1883, and posted at every Custom House, as distinguished from others near it, thus—

*Long Sand*—Two white flashes *every half-minute.*

*Sunk*—Red and white alternately *every* 45 *seconds.*

*Kentish Knock*—One white flash *every minute.*

The number of light-vessels now on the East Coast renders it most important that shipmasters and officers should bear their distinctive characters in mind.

4.—ENGLAND.—*West Coast.—River Dee—New Light-Vessel.—Discontinuance of Air Light.*—In consequence of unavoidable circumstances, the placing of the Dee light-vessel was postponed until the middle of December, 1883, when the said vessel was moored at the entrance of the river Dee, $\frac{6}{10}$ths of a mile E. ¼ S. of the position of the Bell buoy. The light exhibited is a white flash every 10 seconds, shown at an elevation of 30 feet above the water. During thick or foggy weather, a gong will be sounded. At the same time the light known as the Air light on the Point will be discontinued. Also, the Bell buoy would be removed to the position occupied by the Earwig buoy. Further notice will be given.

5.—IRISH SEA.—*Isle of Man.—Port Erin.—Harbour Light Uncertain.*—Consequent upon a portion of the breakwater at this port having been carried away by the sea, and communication with the outer end of the work being thereby interrupted, the light thereon can only be shown when the state of the weather permits access to it being obtained, and its regular exhibition must not be relied on.

6.—IRELAND.—*South Coast.—Fastnet Rock Lighthouse.—Fog-Signal.*—With reference to Notice in 1883, on the intended establishment of an explosive fog-signal at Fastnet rock lighthouse, the signal has been established; it consists of a charge of gun cotton, exploded from the top of a jib (or derrick) surmounting

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the lantern, and will, during thick or foggy weather, be repeated *every five minutes.*

7.—IRELAND.—*South Coast.—Cork Harbour Approach.—Daunt Rock Light-Vessel.—Alteration in Position.*—With reference to Notice in September, 1883, on intended alteration in the position of Daunt rock light-vessel, western side of approach to Cork harbour; on 1st December, 1883, the light-vessel was moved 8 cables E.S.E. from her previous position, and is now moored in 16 fathoms at low water spring tides, with the following bearings and distances:—Daunt rock (shoalest part 10 feet), N. 42° W., distant $1\frac{3}{10}$ths mile; Roche point lighthouse, N.N.E. ½ E., distant $4\frac{6}{10}$ths miles; Ballycottin island lighthouse, E ¾ N., distant $12\frac{1}{3}$rd miles; Kinsale head lighthouse, W. by S., distant 12 miles. *Variation*, $23\frac{1}{4}$° *W.*

8.—SWEDEN.—*West Coast.—The Skagerrak.—Söteskär.—Light on Klöfskär.*—With reference to Notice in 1883, on the intended exhibition of a light on Klöfskär, south side of Sote fiord; on 14th October, 1883, the light was exhibited; it shows *fixed white* between the bearings of N. 7° E. and N. 19° E.; *flashing white* with *one flash* from N. 19° E. to N. 27° E.; *fixed white* from S. 28° W. to S. 16° W.; and *flashing white* with *one flash* from S. 16° W. to S. 8° W. To the southward, the limit between the fixed and flashing lights passes over the East point of the Nord Buskär; northward, the limit between the fixed and flashing lights leads westward of Saltskär. The light is elevated 49 feet above the sea, and visible from a distance of 12 miles. The light is shown from a low tower at the gable end of a building coloured red. Position approximate, lat. 58° 25′ 10″ N., long. 11° 13′ 00″ E. *Variation*, $13\frac{1}{4}$° *W.*

*Note.*—In connection with the exhibition of Klöfskär light, Hällö light will be obscured eastward of a line joining these two lights

9.—SWEDEN.—*West Coast.—The Skagerrak.—Skaftö Island.—Light at Ilandsberg and Leading Lights.*—With reference to Notice in 1883, on the intended exhibition of a light on Ilandsberg, S.W. end of Skaftö island, on 7th November, 1883, the light would be exhibited.

*Ilandsberg Light.*—The light shows *single red flashes* between

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the bearings of S. 60° E. and S. 77° E.; *fixed white* from S. 77° E. to S. 88°. E., indicating the fairway of the channel southward of Bonden (or Fageln); *double white flashes* from S. 88° E. to N. 73° E.; *single red* flashes from N. 73° E. to N. 54° E.; *fixed white* from N. 54° E. to N. 50° E., indicating the fairway of the channel westward of Hättan; and *double white flashes* from N. 50° E. to N. 45° E.; it is obscured westward of Gräsholmar and Bonden. The light is elevated 52 feet above the sea, and is visible—the white light from a distance of 11 miles, the red light from a distance of 6 miles. The lighthouse buildings are white to seaward. Position, lat, 58° 11′ 55″ N., long. 11° 24′ 40″ E.

*Leading Lights.*—On the exhibition of Ilandsberg light, two other lights would be exhibited in the vicinity—the northern light is situated on Osö, northward of Ilandsberg light; the southern light is situated on the S.W., part of Fredagsholm, south-eastward of Ilandsberg light. The light on Osö, exhibited from a small red lighthouse, shows *fixed white* between the bearings of N. 21° E. and N. 30° E., indicating the fairway eastward of Seiningarne; *fixed red* from N. 30° E. to N. 70° E.; *fixed white*, from N. 70° E. to S. 28° W., indicating (to the northward) the fairway between Gäsö and Löken; and *fixed red* from S. 28° W. to S. 38° W.; it is obscured by Seiningarne; this light is elevated 50 feet above the sea. and visible—the white light from a distance of 7 miles, the red light from a distance of 4 miles. The light on Fredagsholm, exhibited from a small white lighthouse, shows *fixed red* between the bearings of S. 32° E. and S. 41° E.; *fixed white* from S. 41° E. to S. 48° E., indicating the fairway between Saltskafva and Norman shoals; *fixed red* from N. 10° W. to N. 45° W.; and *fixed white* from N. 45° W. to N. 60° W., leading to the anchorage in Ellelos fiord; this light is elevated 12 feet above the sea, and visible—the white light from a distance of 5 miles, the red light from a distance of 3 miles.

*Note.*—The two last mentioned lights are not constantly attended to. *Variation*, 12¾° *W.*

10.—Baltic Entrance.—*Kattegat.*—*Leading Lights in Ebeltofte Bay.*—With reference to Notice in 1883, on the intended exhibition of two leading lights close to Norman-house, at the head

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of Ebeltofte (Ebeltoft) bay; on 1st November, 1883, the lights were exhibited from two square buildings, 10 feet high and painted white; the upper building bears N. 10° E. from the lower, distant 650 yards. The low light is a *fixed* light, showing *white* through an arc of 18°, or between the bearings of North and N. 18° E., and *red* from N. 20° E. to N. 23° E.; elevated 37 feet above the sea, and visible from a distance of about 10 miles. Position, lat. 56° 13′ 50″ N., long. 10° 36′ 40″ E. The high light is a *fixed white* light, visible through the arc contained between Helgenœs and Alhagen (Alhage); elevated 104 feet above the sea, and should be seen from a distance of about 15 miles. These lights kept in line bearing N. 10° E. lead well eastward of Skade grund, and just westward of Sandhagen. *Variation*, 13¼° *W.*

11.—Baltic.—*Sweden.—East Coast.—Kalmar Sound.—Leading Light at Skägganäs.*—With reference to Notice in 1883, on the intended exhibition of a leading light from the pilots' house (red) at Skägganäs (Skäggenäs), western side of Kalmar sound; on 31st October, 1883, the light was exhibited; it is a *fixed white* light, placed nearly in the centre of the sector of fixed white light shown from Grimskär lighthouse; it is intensified toward Grimskär, and is fainter on both sides of that direction. The light is elevated 18 feet above the sea (15 feet above the ground), and should be visible in clear weather from a distance of 9 miles. Position, lat. 56° 46′ 20″ N., long. 16° 29′ 10″ E.

12.—Baltic.—*Sweden.—East Coast.—Gottska Sandö.—Light on S.E. Point.*—With reference to Notice in 1883, on the intended exhibition of a light on the S.E. point of Gottska Sandö (Gotska Sandön); about the end of the month of October, 1883, the light was exhibited from a wooden tower, 38 feet high, erected near the seaward gable of the keeper's dwelling (red); it is a *red flashing* light, showing a flash *every five seconds*, visible seaward where the land admits, or between the bearings of about E. and S. 50° W.; elevated 39 feet above the sea, and should be seen from a distance of about 11 miles. Position, lat. 58° 20′ 20″ N., long. 19° 18′ 00″ E. *Variation*, 7½° *W.*

13.—Baltic.—*Gulf of Finland.—Gulf of Viborg.*—On 5th October, 1883, the undermentioned leading lights (burning night

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and day) of small power, are to be exhibited until navigation is closed, from wooden structures erected in the approach to, and in the gulf of Viborg :—

(1.) *Light near Vidskär.*—The light exhibited on Stora Fiskarö islet, near Vidskär, is a *flashing white and red* light, showing about *twenty-six flashes every minute*, visible between the bearings of N.N.W., through west, and S.S.E.; elevated 18 feet above the sea, and should be seen from a distance of about 4 miles. Position, lat. 60° 24′ 30″ N., long. 27° 57′ 50″ E. This light leads eastward of Kongolo (Kuohova or Kaukoluoto) shoal, marked by staff and ball.

(2.) *Light on Rondö Holm.*—The light exhibited on Rondö Holm is a *flashing white and red* light, showing about *fifty flashes every minute*, visible between the bearings of N. 71½° E., through south, and S. 76½° W.; elevated 23 feet above the sea, and should be seen from a distance of about 5 miles. Position, lat. 60° 27′ 5″ N., long. 28° 22′ 35″ E.

(3.) *Light on Alvati Point.*—The light exhibited on Alvati (Alvatinierni) point, northern extreme of Pei-sari (Peis-aari) island, is a *flashing white and red* light, showing about *fifty flashes every minute*, visible between the bearings of N. 69° E., through south, and S. 69° W.; elevated 14 feet above the sea, and should be seen from a distance of 4 miles. Position, lat. 60° 27′ 50″ N., long. 28° 27′ 40″ E.

(4.) *Light on Rödhäll.*—The light exhibited on the N.W. point of Rödhäll (Tuppuransaari) Holm is a *flashing white and red* light, showing about *twenty-six flashes every minute*, visible between the bearings of S. 18½° E., through east, and S. 70½° W.; elevated 18 feet above the sea, and should be seen from a distance of about 4 miles. Position, lat. 60° 34′ 10″ N., long. 28° 26′ 20″ E. *Variation*, 1½° *W.*

14.—Baltic.—*Gulf of Bothnia.—Aland Island.*—(1.) *Light on Botskär.*—A light is now exhibited on Botskär (Bätskär), near Nyhamn; it is a *flashing white and green* light, showing about *fifty flashes every minute*, visible between the bearings of N. 40½° W., through east, and S. 40½° E.; elevated 31 feet above the sea, and should be seen from a distance of about 6 miles.



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Position, lat. 59° 58′ N., long. 19° 57′ E. *Variation*, 7½° *W.* On the neighbouring islet, Lilla Botskär, there is a beacon.

(2.) *Light on Kobbak.*—A light is now exhibited on Kobbak (Kobbaklintarne) near the beacon, to mark the entrance to Mariehamn; it is a *flashing white and red light*, showing about *fifty flashes every minute*, visible between the bearings of N. 28½° E., through east, and S. 41° W.; elevated 26 feet above the sea, and should be seen from a distance of about 5 miles. Position, lat. 60° 2′ 0″ N., long. 19° 52′ 50″ E. *Variation*, 7½° *W.*

(3.) *Finland.—Light on Helgrund.*—It is a *flashing white and red* light, showing about *fifty flashes every minute*, visible between the bearings of S. 66° E., through south and west, and N. 14° E.; elevated 12 feet above the sea, and should be seen from a distance of 4 miles. Position, lat. 63° 38′ 35″ N., long. 22° 26′ 00″ E. *Variation*, 6° *W.*

*Note.*—These lights are not constantly attended to, but should a light become extinguished, it will be re-lighted when the defect is known.

15.—FRANCE.—*West Coast.—Chaussée de Sein (or the Saints).—Fog-Signal at Ar-men Rock Lighthouse.*—With reference to Notice in 1881, on the intended establishment of a fog-signal at Ar-men rock lighthouse, 3½ miles from the western extremity of Chaussée de Sein (the Saints) on 1st December, 1883, the signal would be established; the signal is a steam horn, which, during thick and foggy weather, will give a sound of about *five seconds'* duration *every minute.*

16.—SPAIN.—*North Coast.—Bilboa.—Electric Lights indicating Channel.*—On 15th October, 1883, several electric lights (thirty-two, brush system) would be exhibited at relative distances on the left (or south-western) shore of Nervion river, within the space comprised between the bar at the entrance and the anchorage of Desiero—a distance of about 5,700 yards. The seaward light, also the lights at Portugalete and at the extremity of Benedicta mole, are of greater power than the others. As vessels can enter or leave the port with night tides during fine weather, these lights are exhibited from two hours before high water to two hours after. The signals made by the chief pilot from the tower at the extremity of the S.W.

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sea wall are a *fixed red* light to mark the position of the tower, and a *fixed white* light shown on one or other side of the red light, to indicate whether vessels should alter course to the N.E., or the S.W. side of the channel.

17.—MEDITERRANEAN.—*Strait of Gibraltar.—Tangier.—Light on Landing Stage Altered in Colour.*—With reference to Notice in 1883, on the exhibition of a fixed red and white light on the low battery (S.E. angle of the sea wall) at Tangier, south side of strait of Gibraltar; and that on the exhibition of this light, the light on the landing stage would be discontinued; further information has been received that the light on the landing stage, which it was intended to discontinue, is still exhibited, the colour being altered from red to *green*.

18.—MEDITERRANEAN.—*Italy.—Gulf of Spezia.—Channel Eastward of the Breakwater temporarily Closed.*—In November, 1883, the work of dredging the channel eastward of the breakwater in the gulf of Spezia commenced. For this purpose, chains supported by buoys and not more than 13 feet below the surface of the water, have been stretched across the channel, which is therefore temporarily closed to vessels, except those drawing less than 13 feet. Further notice will be given when the dredging is completed.

19.—MEDITERRANEAN.—*Italy.—Gulf of Salerno.—Salerno.—Harbour Light on Breakwater.*—On 1st December, 1883, a harbour light would be exhibited from the eastern extremity of the breakwater at the port of Salerno. The light is a *fixed white* light, visible inshore through an arc of 200°, comprised between river Jeno entrance (eastward of Salerno) to the eastward, and Crestarella tower (on the coast near Vietri) to the westward; it is elevated 21 feet above the sea, and the range of visibility is such that it can be seen from the coast comprised within the illuminated arc.

*Note.*—This light serves for small vessels using the new eastern entrance of the port, in which the depths are 13 to 19½ feet, with a breadth of 76 yards from the eastern extremity of the breakwater, towards the old Manfredi mole. Large vessels should still use the western entrance.

20.—MEDITERRANEAN. — *Italy.—Naples.—Buoy Marking St.*



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*Vincent Mole Extension.*—A buoy has been placed to mark the masonry of St. Vincent mole extension, port of Naples. The buoy, surmounted by a frame-work globe, is moored about 150 yards from the lighthouse on the mole head, in the line of direction of the mole. Vessels should pass eastward of this buoy.

21.—MEDITERRANEAN.—*Sicily.—North Coast.—Port Palermo.—Light-Vessel marking Northern Mole Extension.*—With reference to Notice in 1882 of a spar buoy, surmounted by a frame globe, having been placed to mark the extremity of the northern mole at port Palermo; on 20th November, 1883, the spar buoy was replaced by a light-vessel moored near the extremity of the masonry in progress for the extension of the northern mole. The light is a *fixed red* light, elevated 28 feet above the sea. Also, on the same date, the fixed red light on the northern mole head was discontinued.

*Note.*—Vessels should pass between this light-vessel and the extremity of the southern mole. When from bad weather, the light cannot be shown from the light-vessel, two fixed *red* lights placed vertically will be exhibited on the northern mole head from the position of the discontinued red light; and vessels should pass at least 175 yards southward of it, in order to clear the masonry in course of construction.

22.—MEDITERRANEAN.—*Strait of Messina.—Italy.—Harbour Lights at Reggio.*—On 1st November, 1883, two harbour lights would be exhibited at the entrance to the port of Reggio, eastern side of the strait of Messina:—A *fixed red* light shown from the mole head; a *fixed white* light shown from the shore, opposite the mole head. These lights are elevated 26 feet above the sea, and should be seen from a distance of about 5 miles; they serve to mark the entrance to the port of Reggio,—vessels should keep on the side of the channel nearest the mole head.

23.—MEDITERRANEAN.—*Strait of Messina.—Reggio.—Alteration in Colour of Harbour Light.*—On 20th November, 1883, the following alteration would be made in the colour of the harbour light shown from the steeple of the church of Santa Maria di Porto Salva, at Reggio, eastern side of strait of Messina:—The light is altered from fixed white to fixed *green*.

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24.—MEDITERRANEAN.—*Adriatic.—East Coast.—Lagostini Islands.—Provisional Light on Glavat Islet.*—On 17th November, 1883, a provisional light was exhibited from a lighthouse, 74 feet high, recently erected on Glavat islet, the easternmost of the Lagostini islands. It is a *fixed red* light, elevated 121 feet above the sea, and visible from a distance of 15 miles. Position, lat. 42° 46′ N., long. 17° 9′ E. Further notice will be given of the exhibition of the permanent light.

25.—MEDITERRANEAN.—*Gulf of Volo.—Position of Sunken Rock Eastward of Palea Trikiri Island.*—With reference to Notice in 1883, on the existence of a detached sunken rock eastward of Palea Trikiri island, and half a mile distant from the nearest shore, which had been discovered in the Greek gun vessel *Parolos*, the following amended information has been published:—The rock lies with the Eastern extreme (cape Aléxi) of Palea Trikiri island bearing S.W. by W. ½ W., distant 2½ cables, and has 14 feet water on it. *Variation*, 7° *W.*

26.—BLACK SEA.—*Sea of Azov.—Lights at Berdiansk.*—With reference to Notice in 1883, on the intended exhibition of two lights from a lighthouse, then in course of construction, at Berdiansk; on 1st October, 1883, the lights were exhibited from a lighthouse erected near the N.W. extremity of the town of Berdiansk; they are *fixed white* lights, placed vertically, visible through an arc of 30°, or between the bearings of N. 17° E. and N. 47° E.; elevated about 165 feet above the sea, and should be seen from a distance of about fifteen miles; the lighthouse consists of a square two-storied tower, constructed of stone and painted white; keeper's dwelling adjoining. Position, lat. 46° 46′ 40″ N., long. 36° 46′ 20″ E. *Variation*, ½° *W.*

27.—AFRICA.—*West Coast.—Grand Bassa.—Sunken Rock in Waterhouse Bay.*—The African Steamship Company, Liverpool, reports the existence of a sunken rock in the anchorage of Waterhouse bay, situated about 9 cables north-westward of Yellow Will reef. This rock, on which the British steam-vessel *Ambriz* struck in 1882, has a depth of 3¾ fathoms on it at low water, and lies with the following mark and bearings:—Tobocannee trees well open westward of Dhouat rocks; Edina, N. 28° E.; Grand Bassa town, N. 49° E.; Fish town, S. 56° E.

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*Note.*—A cask buoy, painted black, was placed on this rock by the commander of the British steam-vessel *Winnebah* in February, 1883. *Variation*, 20¼° *W.*

28.—INDIAN OCEAN.—*Seychelle Islands.—Light on Dennis Island.*—With reference to Notice in 1882, on the intended exhibition of a light from a lighthouse then in course of construction on the northern part of Dennis island, Seychelle group, a light is now exhibited from a lighthouse erected on the N.W. side of that island; it is a *fixed white* light, elevated about 60 feet above the sea, and visible from a distance of about 12 miles. The lighthouse, of wood and painted white, stands on a tripod. Position approximate on Admiralty chart, lat. 3° 48′ S., long. 55° 40′ E.

29.—INDIA. — *West Coast. — Mangalore. — Mouth of River Shifted.*—As the new mouth of the river has shifted farther to the south, commanders of vessels are informed that the anchorage, until further notice, will be with the lighthouse bearing N.E. to N.E. by N. in 4¼ to 5 fathoms low water.

30.—EASTERN ARCHIPELAGO.—*Sumatra.—S.W. Coast.—Reef off Manna Point.*—The reef off Manna point, S.E. of Benkoelen, extends seaward 3 miles from the shore.

31.—CHINA SEA.—*Carimata Strait.*—(1.) *Particulars of Florence Adelaide Reef.*—The Commander of H.N.M. surveying vessel *Hydrograaf*, gives the following description and position of Florence Adelaide reef, Carimata strait:—This reef, composed of coral and stones, with 10 to 12 feet on it at low water, extends 3¼ cables in a N.E. and S.W. direction, with a breadth of 1¼ cable. To the northward it is steep-to, with depths of 17 and 20 fathoms, over mud, at the distance of 1¾ cable; to the eastward, at the distance of half a cable, there is a small detached sand patch with 6 fathoms on it; and farther eastward, at the distance of 2 miles, depths of 13 and 15 fathoms, over sand, were obtained, with 20 fathoms, mud bottom, close-to; on the south side, it is steep-to, with 17 to 20 fathoms, sand and mud, at the distance o one mile. From the *Hydrograaf*, anchored 1¼ cable from the reef, no indication of it, by discolouration of the water or otherwise, was visible. Position, lat. 2° 4′ S., long. 108° 3′ 48″ E.

(2.) *Tongue Islands.—Reef reported Westward of Steil Island.*—

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The reef, on which the Russian vessel *Onni* is stated to have struck, lies with Steil island, the easternmost of the Tongue group, bearing E. by S. ½ S., distant one mile. Position approximate, lat. 1° 34¾′ S., long. 109° 11½′ E. *Variation*, 2½° *E.*

32.—Korea.—*S.E. Coast.—Rock North-Eastward of Tikhmenef Point.*—Lieutenant and Commander Lindsay, H.M.S. *Vigilant*, reports the existence of a dangerous rock lying with Tikhmenef point, bearing S. 20° W., distant 5 miles, and about 2 miles from the nearest shore. When seen from the *Vigilant* in passing, the rock was nearly awash, and the sea was breaking on it. Position approximate, lat. 35° 34′ N., long. 129° 34′ E. *Variation*, 4¾° *W.*

33.—Australia.—*N.W. Coast.—Reef North-Eastward of Troughton Island.*—Lying with Troughton island bearing S.W. ¼ S., distant about 6½ miles; this reef (*Guichen reef*), on which the French steam-vessel of war *Guichen* struck, is stated to be of some extent, with several rocky heads that uncover at low water. Position approximate on Admiralty charts, lat. 13° 39′ S., long. 126° 18′ E. *Variation*, 1¾° E.

34.—South Australia.—*Gulf of St. Vincent.—Beacon on North Spit.*—A pile beacon has been placed on the end of the North spit, in 5 feet at low water, in lat. 34° 41′ 30″ S., and long. 137° 54′ 15″ E. (approximately); it will be painted black and surmounted by a St. Andrew's cross. This beacon clears the spit leading to what is known as Sheaoak flat.

35.—South Australia.—*Deepening Operations, Port Adelaide River.*—The whole of the cutting through the Inner Bar is now widened to 150 ft.

36.—Pacific Ocean.—*Tonga or Friendly Islands.—Tongatábu Island.—Shoal in Tongatábu Harbour Approach.*—The commander of the German vessel of war *Hyäne* reports the existence of a shoal lying in the northern approach to Tongatábu harbour. The bottom was seen from the *Hyäne* when passing near this shoal (*Hyäne*), and a depth of 6 fathoms was obtained about 2 cables northward of a spot on which the sea was breaking; to the northward the depth increased to 9 and 16 fathoms. For the position of the 6 fathoms, the following bearings are given:—Mallenoah islet,

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South; south extreme of Atataa islet, S.W. ¼ S. Position, lat. 20° 55½′ S., long. 175° 5′ W. *Variation*, 10° *E.*

37.—West Indies.—*New Granada—Light at La Hacha.*—With reference to Notice in 1883 on the re-exhibition of a light at La Hacha, this light, shown from a white lighthouse, is a *fixed red* light, visible seaward between the bearings of N.E. and S.W.; elevated 90 feet above the sea, and should be seen from a distance of 15 miles. Position, lat. 11° 33′ N., long. 72° 55′ W. *Variation*, 3¼° *E.*

38.—West Indies.—*Cuba.—North Coast.—Port Caybarien Approach.—Light on Francés Cay.*—Exhibited from a lighthouse erected (near the site of the flagstaff destroyed by lightning in 1874) on the western end of Francés cay, approach to port Caybarien; it is a *fixed white* light, elevated 61 feet above the sea, and visible from a distance of about 11 miles. The lighthouse, of iron framework, is painted white, with keeper's dwelling at its base. Position on Admiralty plan, lat. 22° 38½′ N., long. 79° 13′ W.

39.—United States.—*Gulf of Mexico.—Mississippi Sound.—Merrills Shell Bank Light Re-exhibited.*—With reference to Notice in 1883 on the destruction by fire of Merrills Shell bank lighthouse, western side of Mississippi sound, and exhibition of a provisional light, the lighthouse has been rebuilt, and the light re-exhibited. The light is, as formerly, a *fixed white* light, elevated 45 feet above the sea, visible in clear weather from a distance of 12 miles.

40.—United States.—*North Carolina.—Re-establishment of Light at Cape Hatteras Beacon.*—On and after December 15, 1883, a *fixed white* light will be exhibited from the old cape Hatteras beacon, elevated 25 feet above mean low water, and visible 9 miles. The structure is a wooden frame surmounted by a lantern, the whole painted red. Approximate position, lat. 35° 14′ 15″ N., long. 75° 31′ 18″ W.; and cape Hatteras lighthouse bears due North, one mile.

41.—United States.—*Massachusetts.—Gloucester Harbour.—Automatic Signal-Buoy off Eastern Point.*—On or about 20th November, 1883, an automatic signal-buoy would be placed off Eastern point, Gloucester harbour entrance. The buoy, surmounted by a whistle giving from *twenty to thirty blasts per minute*, s moored in 16½ fathoms, with the following bearings and dis-

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tances:—Eastern point lighthouse, N. by E., distant 5 cables; Thatchers island outer lighthouse, N.E. by E., distant 5½ miles.

*Note.*—From this buoy, a N. by W. ½ W. course will lead into Gloucester harbour, about midway between Dog bar and Round rock shoal. *Variation*, 12½° *W.*

42.—CANADA.—*New Brunswick.—St. John.—Re-establishment of Negro Point Breakwater Light.*—The lighthouse on the outer end of the breakwater at Negro point, port of St. John, has been re-erected on the new stonework, and the light was exhibited in November, 1883; lat. 45° 14′ 25′ N., long. 66° 4′ W.; the light is *fixed red;* elevated 40 feet above high water, and visible eight miles from all points seaward; the tower is situated 50 feet from the end of the pier, and stands upon a cut-stone circular foundation. It is an open framed hexagonal tower painted white, surmounted by a lantern painted red, and is 35 feet in height from stonework to vane of lantern.

43.—NEWFOUNDLAND.—*S.E. Coast.—St. Mary's Bay.—Light on Lahaye Point.*—Exhibited from a lighthouse erected on Lahaye point, eastern side of St. Mary's bay; it is a *fixed white* light, elevated 63 feet above the sea, and visible from a distance of nine miles; the lighthouse, constructed of iron and circular in shape, is painted alternately red and white in horizontal bands (three red and two white); these bands are continued around a storehouse attached. Position, lat. 46° 54′ 20″ N., long. 53° 36′ 40″ W.

44.—NEWFOUNDLAND.—*East Coast.—Conception Bay.—Bay Roberts.—Lights on Green Point.*—Exhibited from a lighthouse erected on Green point, southern side of entrance to Bay Roberts. The principal light is a *fixed white* light, elevated 56 feet above the sea, and visible from a distance of about 8 miles. Immediately beneath the principal light is a projecting lantern, from which three lights are exhibited. The two outer lights show *white*, and the centre light, in line with Southern rocks bearing S.W. ½ W., shows *red*. The lighthouse, constructed of iron and circular in shape, is painted alternately red and white in horizontal bands (two red and three white). A storehouse in rear of the lighthouse is painted white. Position, lat. 47° 36′ 40″ N., long. 53° 10′ 15″ W. *Variation*, 31° *W.*

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45.—NEWFOUNDLAND.—*Entrance to Straits of Belle Isle.—Cape Bauld.*—On or about August, 1884, a *red* and *white* alternating light will be shown from the northern extremity of cape Bauld. Particulars next month.

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## OUR OFFICIAL LOG.

THE Board of Trade have awarded binocular glasses to Captain Hermann Neynaber and Mr. Hinrich Winter, master and mate respectively of the German s.s. *Rhein*, of Bremen, in recognition of their kindness and humanity to the shipwrecked crew of the schooner *Lotus*, of Arbroath, who were rescued from their sinking vessel in the steamer's lifeboat, commanded by the first officer, on the 30th October, 1883.

A sum of money has also been awarded to each of the crew who accompanied the first officer in the boat.

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THE Board of Trade have awarded a piece of plate to Captain McDonald, master of the barque *Alumbagh*, of London, in recognition of the perseverance and skill shown by him in rescuing the crew of the British barque *Carnatic*, 19 in all, from their sinking vessel on the 5th August last.

The *Alumbagh* had herself been considerably damaged in the same storm which wrecked the *Carnatic*, and, owing to the state of the weather, was obliged to lay by the latter vessel for over 14 hours, before her lifeboat, manned by the chief officer and five of her crew was able to effect the rescue.

A binocular glass has been awarded to the chief officer, and a sum of money to each of the five men who accompanied him, for their gallantry on this occasion.

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THE Board of Trade have awarded a binocular glass to Captain Angelo Guecco, of the barque *Luigi P.*, of Genoa, in recognition of his kindness and humanity to the shipwrecked crew of the barque *Serena*, of Swansea, ten in all, whom he picked up in their

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boat at sea, on the 3rd August last, and landed at Valparaiso on the 25th August.

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British Wrecks in November, 1883.—The number and tonnage of British vessels respecting whose loss reports were received at the Board of Trade during the month of November, 1883, and the number of lives lost are as follows :—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing ..... | 127 | 21,164 | 174 |
| Steam ..... | 13 | 7,613 | 95 |
| Total ..... | 140 | 28,777 | 269 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in November relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—Thomas Gray, Assistant-Secretary, Marine Department.—Board of Trade, 3rd December, 1883.

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Official Inquiries at Home, 1883.

1981. *Grinkle*, s.s.; built at Jarrow, 1876; owned by Palmer's Shipbuilding and Iron Company, Limited; tonnage, 186; stranded on Hendon Rock, Mouth of Wear, October 15, 1883. Inquiry held at North Shields, November 8, 1883, before Wait and Tully, Justices; Beasley and Hyde, N.A. Master committed error of judgment. Cautioned to be more careful in future.

1982. *Jumbo*, fishing smack; built at Yarmouth, 1866; owned by Mr. A. A. Warner; tonnage, 23; on a fishing cruise; lost near Withernsea, October 1, 1883, when loss of life ensued. Inquiry held at Yarmouth, November 8, 1883, before Aldred and Jay, Justices; Anderson and Kennedy, N.A. Master in default for careless and unskilful navigation.

1985. *Potaro*, s.s.; built at Hartlepool, 1879; owned by Mr. W. Young and others; tonnage, 817; Taganrog to Amsterdam; wheat; stranded near the Burlings, Coast of Portugal, September 23, 1883. Inquiry held at Middlesbro', November 15, 1883, before Coleman,

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Judge; Methven and Castle, N.A. Master in default for running at too great speed in a dense fog. Severely reprimanded.

1988. *Douglas*, ship; built in 1869; owned by Mr. G. W. Gass; tonnage, 1,428; Bassein to U. K.; rice; took a strong list to port and lost several sails in heavy gale off Cape Agulhas, when two hands were washed overboard, June 17, 1883. Inquiry held at Liverpool, November 17, 1883, before Raffles, Judge; Parish, Pickard and French, N.A. Casualty due to cargo shifting, which had not been properly stowed.

1991. *Empress*, s.s.; built at Hull, 1868; owned by Messrs. W. S. Bailey and others; tonnage, 706; Hull to Hamburgh; general cargo and coals, also some passengers; suffered damage from an explosion which took place on board, October 6, 1883, when loss of life ensued. Inquiry held at Hull, November 21, 1883, before Twiss, Judge; Burney, Parfitt and Davies, N.A., and Lang, E.A. Accident due to coals becoming wet and heated, and the gas thereby generated exploding on light being held over the hatchway.

1992. *Juana Nancy*, s.s.; built at Dundee, 1883; owned by Mr. C. O. Fawcus; tonnage, 549; Bilboa to the Tyne; iron ore; stranded on St. Mary's Island, October 31, 1883. Inquiry held at North Shields, November 21, 1883, before Spence and Adamson, Justices; Ward and Wilson, N.A. Master guilty of error of judgment. Cautioned to be more careful.

1993. *Werneth Hall*, s.s.; built at Glasgow, 1882; owned by the Sun Shipping Co., Limited; tonnage, 2,690; Liverpool to Bombay; coals and general cargo; stranded near Great Farilhoes, Portugal, August 25, 1883. Inquiry held at Liverpool, November 23, 1883, before Raffles, Judge; Forster and Rees, N.A. Casualty caused by vessel having been navigated at too great a speed in a dense fog. Master's certificate not dealt with.

1994. *Mirzapore*, ship; built at West Hartlepool, 1863; owned by Mr. J. Gillison and others; tonnage, 1,186; London to Melbourne; general cargo; stranded Touquet Point, Coast of France, October 23, 1883. Inquiry held at Westminster, November 23, 1883, before Rothery, Wreck Commissioner; Hight and Ronaldson, N.A. Master in default for mistaking the Touquet Lights for those at South Foreland. Certificate suspended for twelve months.

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1995. *Warsaw*, s.s.; built at Greenock, 1864; owned by Mr. J. Currie; tonnage, 376; Leith to Newcastle; general cargo; stranded on St. Mary's Island, November 8, 1883. Inquiry held at Leith, November 28, 1883, before Garland and McIntosh, Judges; Ward and French, N.A. Accident caused by neglect of lead in foggy weather. Master and mate admonished.

1977. *Holyhead*, s.s., and *Alhambra*, ship; the former built at Port Glasgow, 1883; owned by London and North-Western Railway; tonnage, 162; engaged making trips from Dublin to Holyhead with cattle; the latter owned by Mr. Dultz, of Pillau; tonnage, 1,300; Liverpool to New York; coals as ballast; in collision in the Irish Channel, October 30, 1883, when loss of life ensued. Inquiry held at Westminster, November 22, 1883, before Rothery, Wreck Commissioner; Knox, Ronaldson, and Harland, N.A. Collision caused by master of *Alhambra* throwing his ship across the bows of the steamer, and by one engine of the *Holyhead* only having been reversed, instead of both.

2000. *Dissington*, s.s.; built at South Shields, 1880; owned by Mr. C. Humble and others; tonnage, 404; Nyberg to Brest; battens, &c.; lost on Nekman's Grund, Baltic, October 12, 1883. Inquiry held at North Shields, November 28, 1883, before Hedley and Cleugh, Justices; Curling and Vaux, N.A. Master in default for navigating his vessel too close to the shoals. Certificate suspended for three months.

2001. *Medina*, s.s.; built at Cardiff, 1883; owned by Mr. J. Ware; tonnage, 143; Newport to Devoran, Falmouth; coals; lost on the Manacles Reef, November 7, 1883. Inquiry held at Cardiff, November 29, 1883, before Rothery, Wreck Commissioner; Anderson and Davies, N.A. Master to blame for negligent navigation. Certificate suspended for six months; recommended for one as mate.

2003. *Serantes*, s.s.; built at Sunderland, 1872; owned by Mr. C. T. Glanville and others; tonnage, 470; Seville to Bilboa; ballast; suffered damage from striking a rock near Cape Finisterre, October 17, 1883. Inquiry held at Cardiff, November 30, 1883, before Rothery, Wreck Commissioner; Anderson and Davis, N.A. Master in default for negligent

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navigation in shaping a course too near the land, and in making no allowance for the westerly swell. Certificate suspended for six months.

2002. *Earl of Dumfries*, s.s.; built at Sunderland, 1882; owned by Mr. W. H. Martin; tonnage, 970; Taganrog to Altona; rye; stranded on Guia Point, Cape St. Vincent, August 4, 1883. Inquiry held at Cardiff, November 29, 1883, before Rothery, Wreck Commissioner; Anderson and Davis, N.A. Master to blame for negligent navigation in running his ship at too great a speed and too near the land in a dense fog, and also for neglecting the lead. Certificate suspended for six months. Recommended for one as mate.

2004. *Zelini*, s.s.; built at Seacombe, 1871; owned by Messrs. Glyn; tonnage, 427; Cardiff to Oporto; coals. Supposed to have foundered at sea. Inquiry held at Cardiff, December 3, 1883, before Rothery, Wreck Commissioner; Rees and Kiddle, N.A. In good and seaworthy condition when leaving Cardiff. No evidence as to cause of loss.

2009. *Cyanus*, s.s.; built at Hartlepool, 1880; owned by Mr. W. Young and others; tonnage, 1,060; Taganrog to Hull; rape-seed and barley; stranded near Petchany Lightship, Gulf of Azov, October 30, 1883. Inquiry held at Newcastle-on-Tyne, December 7, 1883, before Rothery, Wreck Commissioner; Methven and Kennedy, N.A. Casualty due to the use of an incorrect chart. Master free from blame.

2010. *Littlebeck*, s.s.; built at South Shields, 1877; owned by Mr. W. Maclean; tonnage, 761; Taganrog to Malta, for orders; wheat; stranded near Biclosarai Point, Sea of Azov, October 16, 1883. Inquiry held at Newcastle, December 7, 1883, before Rothery, Wreck Commissioner; Methven and Kennedy, N.A. Master guilty of negligent navigation; but as no material damage was sustained by ship or cargo, his certificate was not dealt with.

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### Official Inquiries Abroad, 1883.

1978. *Brenda*, brig; lost at Tumano, Gote Islands, August 17, 1883. Naval Court held at Nagasaki. Casualty due to an unusually strong current accelerated by the force of a typhoon.

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1983. *Alma*, barquentine; lost on Elizabeth reef, Auckland, N.Z. Inquiry held at Auckland, September 3, 1883. Master in default for negligence. Certificate suspended for three months.

1984. *Murray*, s.s., and *Phœnix*, cutter. In collision in Nelson Outer Harbour, August 28, 1883. Inquiry held at Nelson, September 8, 1883. Master of steamer to blame for neglecting to stop and reverse. Censured.

1986. *Carleton*, schooner; lost near Catch Island, Eleuthera Coast, September 8, 1883, when loss of life ensued. Inquiry held at New Providence, September 20, 1883. Loss caused by hurricane.

1987. *Victor*, schooner; lost at Norman's Cay, Bahamas, September 8, 1883, when loss of life ensued. Inquiry held at New Providence, September, 20, 1883. Loss due to hurricane.

1989. *Scottish Chieftain*, ship; lost on Andaman Islands, September 8, 1883. Inquiry held at Calcutta, October 4, 1883. Master in default for negligent navigation. Certificate suspended for three months.

1990. *Canima*, s.s.; lost at Gull Island, St. Mary's, Newfoundland, September 5, 1883. Master to blame for negligence. Certificate suspended for twelve months.

1996. *Lyra*, ship; lost on Canonier Point, Mauritius, September 25, 1883. Inquiry held at Mauritius, October 2, 1883. Master to blame for injudicious navigation. Certificate suspended for nine months.

1998. *Agra*, barque; stranded on North Hinder Shoal, North Sea, June 11, 1883. Naval Court held at Philadelphia, October 2, 1883. Master guilty of careless navigation, and also of concealing the fact that the ship had been ashore. Certificate suspended for nine months.

1990. *Palmerin*, s.s.; lost in Placentia Bay, Newfoundland, October 13, 1883. Inquiry held at St. John's, Newfoundland, October 23, 1883. Master and mate to blame. Certificates suspended for twelve months respectively.

2005. *Truganini*, s.s.; stranded on the rocks off Tern Island, August 29, 1883. Inquiry held at Brisbane, October 16, 1883. Master and mate to blame for careless navigation. Certificates suspended for three months respectively.

2006. *Ceres*, barque; lost on Bampton Reefs, September 5,

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1883. Inquiry held at Queensland, October 9, 1883. Master in default. Censured.

2007. *Taiwan*, s.s., and *Octopus*, dredge; in collision in Brisbane River, September 21, 1883. Inquiry held at Brisbane, September 28, 1883. Accident occasioned by the steamer not answering her helm properly.

2008. *Stanley*, schooner; lost on Indispensable Reef, July 4, 1883. Inquiry held at Brisbane, September 25, 1883. Master incompetent. Certificate cancelled.

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## MERCHANT SHIPPING LEGISLATION.

[That the Board of Trade is now moving earnestly in the matter of the welfare of our Commercial Marine is plainly evident. The following memorandum emanating from that Department is a candid statement of the state of affairs as seen by official eyes, and in our opinion its publication ought to be re-assuring to the country at large that the question is so comprehensively grasped by those in authority. We have not space to print the whole of the memorandum in the present number, but shall continue it in future issues.—Ed. *N. M.*]

THERE can be little doubt that among the secondary and non-political subjects which will call for the attention of the present Parliament, the condition of merchant shipping is one of the most prominent. The shipping interest grumble at the harassing effect of recent legislation, and at the action of the Board of Trade; the President of the Board has told us that the evils against which that recent legislation was directed are growing, and that his Department is under the present law unable to cope with them; and the Reports of the Wreck Commissioner point to a state of things which the public conscience will not permit to continue.

Many suggestions have been made for amending the present laws relating to the Mercantile Marine; and Mr. Chamberlain has quite recently taken the unusual step of laying before the public

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the outline of an intended measure, and of inviting the shipowners to express opinions upon it before it is introduced. It is, therefore, a good opportunity for reviewing the whole subject, and for considering what are the principles by which our legislation should be guided. The question is one of great importance; its decision will affect the future of the Mercantile Marine of this country; and not of this country only, but of the world, for in marine legislation other countries follow our example.

The enactments of 1875-76, which followed on the Plimsoll agitation, have been on trial for several years, and it is possible now to ascertain what their consequences have been. These enactments must form our starting point. They embody the last great efforts of the Legislature to save life and property at sea, and may be judged by themselves.

It must not, however, be supposed that the endeavour to prevent shipwreck is a new thing. From a Parliamentary paper, presented in 1876 (C. 1398), it appears that from the date of the Shipwreck Committee of 1836 scarcely a session has passed without some Act being passed or some step being taken by the Legislature or the Government with this object. Lighthouses; harbours; pilots; manning, health, and well-being of crews; skill and experience in officers; lifeboats; bulkheads; safety valves; anchors;—are among the special subjects which have engaged attention.

Committee after Committee, Commission after Commission, have reported, and Bill after Bill has been passed, till the multiplicity of Statutes, which were all consolidated into one Act in 1854, has again become a scandal and reproach.

For the many subjects thus dealt with we must refer to the paper above-mentioned, and confine ourselves to the single question of unseaworthy ships. Emigrant ships and passenger steamers, have long been subject to a Government survey, and the system has worked with little difficulty. The principal reason probably is, that these ships are among the best on the ocean; no expense and no skill is spared by the owners; and amongst them are many which are not insured. Nor does a passenger ship raise the questions of danger from overloading and improper loading



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which arise in the case of cargo ships. The surveyors of the Board of Trade and the Emigration Officers have as a general rule been on perfectly friendly terms with the owners and managers of these ships, and indeed have usually co-operated with them in endeavouring to ascertain and remedy weak points. Differences there have occasionally been on certain points, such as the form of a new safety valve or the strength of an iron plate, but there have been no such burning questions as are now in agitation. One additional reason for this, no doubt, is that the officers of the Board of Trade and of the Emigration Commissioners have not attempted these ambitious functions with which it is in some quarters now proposed to clothe the Board of Trade. They have not tried to dictate to the builders of the Clyde and the Tyne the form of their ships or the methods of construction. Their functions have been confined to seeing that work was sound and good of its kind according to the existing standards of knowledge and practice.

The difficulties began when attention was called to the loss of seamen's lives in ordinary cargo-carrying ships; and it is to Mr. Plimsoll, no doubt, that is due the credit of calling special attention to this evil, and of creating a popular force which was capable of grappling with it. The Board of Trade and the Home Office had in 1855, called the attention of magistrates at the outports to the illegality and injustice of imprisoning men for refusing to serve in unseaworthy ships, and in 1864 the surveyors of the Board were placed at the disposal of the magistrates for the purposes of enabling them to decide questions of unseaworthiness, when unseaworthiness was alleged as a justification for desertion. The Merchant Shipping Consolidation Bill, introduced by Mr. Lefevre in 1869, contained a provision enabling seamen charged with desertion to demand a compulsory official survey, a provision which became law in 1871. But the real beginning of the legislation now under consideration was made in 1871. Mr. Plimsoll had in 1870 moved a resolution in favour of a compulsory load-line and survey for all merchant ships; and in 1871 Parliament enabled the Board of Trade on complaint made to them to prevent any ship from going to sea

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if found from defects in her hull to be unseaworthy. In the winter of 1872-73 Mr. Plimsoll's book appeared; the Royal Commission on unseaworthy ships was appointed; and in 1873 the power of detaining unseaworthy ships was extended to cases of overloading and improper loading, and the Board of Trade were enabled to act on the report of their own officers without complaint from outside. It was apparently not intended at this time to create any system of universal survey. Indeed, the staff of the Board of Trade, which is now utterly unequal to any such task, was then much smaller, and less adapted for the purpose than it now is. The intention seems to have been to select any specially bad cases and to make examples of them; punishing them, if necessary, by criminal prosecution as well as by detention. But these enactments no doubt contained a germ which has since been much expanded, and which some reformers seek to expand still farther into a system of universal surveillance.

In 1875 the Plimsoll agitation was still at its height. A Bill was introduced by Lord Norton, then Sir C. Adderley, founded on the report of the Unseaworthy Ships Commissioners, and was abandoned by the Government. It is unnecessary to refer here to the "dramatic incident" which closed its career; or to the agitation which ensued. A Bill was hurriedly passed, extending the power of detaining unseaworthy ships to the local officers of the Board of Trade; and in the autumn a very large extension of the staff of the Board of Trade was made by the Government for the purpose of carrying these powers into effect, as may be seen on referring to the Parliamentary Paper, No. 1, 1876. By the Bill of 1875 was also introduced a provision requiring every owner to place on his ship a voluntary load-line, which is now commonly known as the Plimsoll mark; and in referring to this, it is only just to Mr. Plimsoll to say that no one protested against this foolish and delusive bit of legislation more earnestly than he did. The legislation of 1875 was confirmed and rendered perpetual by the Merchant Shipping Act of 1876, and it is under that Act that the functions of the Board of Trade with respect to unseaworthy ships are now exercised. Under this Act either the Board of Trade or one of its officers named for the



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purpose may detain a ship, and the shipowner has an appeal to a court, composed of a judge (virtually the Wreck Commissioner) and two assessors, one appointed by the Board of Trade, the other out of a list framed by the shipowners of the port.

Eight years have now passed, and it is time to ask what have been the results of this legislation?

1. It cannot be said that the powers given to the Board of Trade have not been exercised.

The surveying staff of the Board of Trade in 1870 cost about £12,000 a-year. It has been increased to meet the new requirements until it now costs £50,000 a-year, and is likely to increase.

The law charges of the Board of Trade then, as now, arising principally out of marine questions, were in 1871 less than £5,000 a-year; they are now nearly £23,000.

From October, 1876, down to the end of June last no less than 832 ships had been provisionally detained by the Board of Trade and its officers; 530 for defects in hull, machinery, or equipments, and 302 for overloading. Out of these, 13 were found on inquiry to be safe; 6 had been detained under circumstances which were not held to call for detention; 4 were waiting for survey; and the remaining 809 were detained as unsafe until the defects were remedied.

2. It cannot be said that the proceedings of the Board of Trade have inflicted any serious amount of loss upon shipowners. The Act of 1876 gives to the shipowner, as above mentioned, an appeal to an independent court, consisting either of the Wreck Commissioner or some paid magistrate and two assessors, one appointed by the Board of Trade, and one out of a list framed by the shipowners of the port. Out of the above 832 cases there have only been four in which the shipowner thought it worth while to carry an appeal to a hearing. Of these cases, three were cases of overloading, and in every one of them the Court of Survey ordered the vessel to be lightened, though in two of them not to the whole extent required by the Board of Trade. The fourth case was remarkable, and its history is not such as to encourage officials to interfere with ships on the ground of faults

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in their form and design. The ship was detained by the Board of Trade officers on the ground that in point of design and construction she would be unsafe for an Atlantic voyage. She was released by the Court of Survey. An action was brought against the Board of Trade by the shipowners, and a verdict for damages was obtained, on the ground that the Board of Trade had no good reasons for detaining her. Finally, to sum up the story, she disappeared on an Atlantic voyage with a crew of 43 souls.

From these facts it is clear that shipowners have suffered little by detention; that, as a matter of fact they have not taken advantage of the right of appeal given to them, either because the loss sustained did not make it worth their while, or because they felt they had no case; whilst the case above referred to shows clearly enough that if they have been unwilling to avail themselves of the remedies offered, it is not because the courts to which an appeal lies are prejudiced against the shipowner.

3. Nor can it be said that the proceedings of the Board of Trade have inflicted any serious injury on the British Mercantile Marine, or have impeded its constant development. It has been the one branch of industry which has constantly flourished during recent times of commercial depression. It has taken to itself more and more of the trade of the world.

Taking 1870, before this legislation commenced; 1875, when the earlier Acts were in operation; and 1880, 1881, 1882, when the Act of 1876 had been in operation for some years, the growth of British shipping was as follows:—

TOTAL SHIPPING OF BRITISH EMPIRE.

| | Aggregate Tonnage. | Steam Tonnage. |
|---|---|---|
| 1870... ... ... ... | 7,149,184 | 1,202,134 |
| 1875... ... ... ... | 7,744,237 | 2,072,804 |
| 1880... ... ... ... | 8,447,171 | 2,949,282 |
| 1881... ... ... ... | 8,575,560 | 3,239,503 |
| 1882... ... ... ... | 8,796,517 | 3,571,078 |

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The tonnage passing through the Suez Canal was in the same year as follows :—

| Ships of all Nations. | | | British Ships. | | |
|---|---|---|---|---|---|
| Year. | No. | Net Tonnage | No. | Net Tonnage. | Approximate Proportion of British to Total Tonnage. |
| 1870 | 486 | 435,911 | 314 | 289,234 | 66 per cent. |
| 1875 | 1,494 | 2,009,984 | 1,061 | 1,454,258 | 72 ,, |
| 1880 | 2,026 | 3,057,421 | 1,592 | 2,432,932 | 79½ ,, |
| 1881 | 2,727 | 4,136,779 | 2,250 | 3,429,777 | 82 ,, |
| 1882 | 3,198 | 5,074,808 | 2,565 | 4,126,245 | 81 ,, |

The total amount of tonnage added to the British Register in these years was as follows :—

| | |
|---|---|
| 1870 ... ... ... ... | 391,831 |
| 1875 ... ... ... ... | 502,585 |
| 1880 ... ... ... ... | 411,736 |
| 1881 ... ... ... ... | 561,750 |
| 1882 ... ... ... ... | 714,521 |

and most of this steam tonnage.

In fact, British shipping, so far as we can judge by figures, has never increased so fast or attained such a development as it has since the system of which shipowners complain so much has been in operation.

Is the present system, then, satisfactory ? and are the critics in error when they find fault with it ? By no means.

The real charge against it is much more serious than they have made out. The true charge is not that it has been inoperative ; it is not that it is vexatious ; it is not that it has impeded the development of British shipping. It is that it has failed in its intended object, if that object was the prevention of wrecks with their attendant loss of life.

It is a most remarkable fact that the loss of life and of ships has been greater since 1876 than it ever was before.

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This is a startling fact, but published statistics leave no doubt.

The figures showing the loss of life at sea in British ships are very significant. From a return moved for by Mr. W. H. Smith (Parliamentary paper 143, 1883), it appears that the loss of life has, on the whole, increased since 1875-76, when it was 2,031, and that it was 3,372 in 1881-82. It also appears that the loss of life in 1881-82 was greater than in any year since 1867, except in one year, 1873-74, when it was swollen by the loss of nearly 1,200 coolies in two emigrant ships.

The Wreck Abstracts show that in 1875-76 2,072 lives were lost by shipwreck of British ships, and that the number in 1881-82 was 3,688. These and the following figures are taken from the Wreck Abstracts as they stand. They do not include partial losses of ships, or lives lost in ships not totally lost, neither do they include losses in harbour; but they *do* include fishing vessels. For these reasons they differ slightly from the figures in Mr. W. H. Smith's Return, and from those recently quoted by Mr. Chamberlain. But the difference in figures is small, and has no effect whatever on the argument.

The actual number of total losses of British ships at sea in each of the last two years has been larger than in any year upon the record. In 1880-81 there were lost 1,310 ships of 348,186 tons; in 1881-82, 1,303 ships of 378,424 tons.

Investigation of the losses in particular trades leads to similar results.

The losses of timber-laden ships has long attracted attention, and the Canadian Parliament had before 1876 adopted stringent rules prohibiting deck loads, which were one of the chief causes of loss. These rules were adopted in the Imperial Act of 1876, and by an unprecedented stretch of municipal legislation were applied to foreign ships loading in their own country. Attempts were made to get the United States Government to join in enforcing similar rules on their own ships in their own ports, but they refused.

Taking the average yearly losses for periods of three years, the

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losses in British timber-laden ships since 1875 have been as follows :—

| Years. | Ships. | Lives. |
|---|---|---|
| 1876-7, 1877-8, 1878-9 ... | 83 | 105 |
| 1879-80, 1880-1, 1881-2 ... | 103 | 185 |

The losses in the last year recorded are—

| Years. | Ships. | Lives. |
|---|---|---|
| 1881-2 ... ... ... | 98 | 280 |

The case of grain-laden ships has been the subject of much special discussion and legislation. In 1875 a clause was introduced into the Bill of that year making it penal to carry grain except in bags, or with other securities against shifting, and this clause was re-enacted with increased penalties in 1876. In 1880, the subject of grain-laden ships was carefully investigated by a competent Select Committee, and an Act was passed containing elaborate provisions concerning the loading of grain ships.

From the returns presented to Parliament, it appears that the losses in ships loaded wholly or chiefly with grain have been as follows, taking the averages for periods of three years.

| Years. | Ships. | Lives. |
|---|---|---|
| 1876-7, 1877-8, 1878-9 ... ... ... | 82 | 406 |
| 1879-80, 1880-1, 1881-2... ... ... | 74 | 386 |

The losses in the last year, of which we have a record, are—

| Years. | Ships. | Lives. |
|---|---|---|
| 1881-2 ... ... ... ... ... | 68 | 551 |

Earlier returns will be found in Parliamentary Paper, 211, 1876. They do not admit of exact comparison because the earlier returns, unlike the later, comprise ships which only carried a small proportion of grain. Allowing for this the later returns show a large increase of loss.

The case of coal-laden vessels leads to results not very dissimilar. The losses of these vessels had in 1875-1876 attracted much attention, and the subject was fully investigated by a competent Royal Commission which reported in 1876, and

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which made important, and, no doubt, excellent recommendations for preventing what were supposed to be two principal causes of loss, viz., explosion of coal gas and spontaneous combustion. The utmost possible publicity has been given to these recommendations, and from the instructions given to the Board of Trade officers, and from the reports of wreck inquiries we may assume that those officers have done their best to enforce them.

Under these circumstances, the loss of coal-laden British ships, taking averages for periods of three years is as follows:—

| Years. | Ships. | Lives. |
|---|---|---|
| 1876-7, 1877-8, 1878-9... ... ... | 196 | 447 |
| 1879-80, 1880-1, 1881-2... ... ... | 239 | 591 |

The losses in the last year, of which we have a record, appear from the wreck register to be as follows:—

| Years. | Ships. | Lives. |
|---|---|---|
| 1881-2 ... ... ... ... ... | 285 | 756 |

Something must in these cases be allowed for increase of trade; but no returns give the exact quantity of trade in those articles carried in British ships alone; and it is therefore impossible to give the proportionate amount of loss. It is, however, unlikely that the trade has increased in proportion to the loss of life; and even if it has, legislation, which can produce no better results than the above, must be pronounced a failure.

The loss of life in 1881-2 was greater than ever. No doubt a large part of this loss was immediately caused by the violent gales of that autumn, when, as has been said, the Bay of Biscay was strewed with the wrecks of foundered ships. But well found ships ought not to strew the ocean in every heavy gale,

Now these tremendous losses are certainly not due to any want of accurate and scientific knowledge in those in authority. In the case of ships laden with corn, timber, and coal, the legislature and the executive were enlightened by the best and most advanced knowledge which able and skilful inquiry could procure. Nor were they due to any niggardliness in supplying official machinery. The surveying staff of the Board of Trade has been increased till it

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costs £50,000 a year, and the legal expenses of the Board, due almost entirely to wreck expenses, are now not less than £23,000 a year. Both knowledge and money have been poured out like water, but with little or no result. What then is to be done? Are we to sit down helpless in face of this terrible loss of property and the far still more terrible loss of life? Self interest and the feeling of humanity alike forbid any such cowardly abandonment of duty. Something must be attempted, and there appear to be two distinct courses possible.

We may, on the one hand, proceed further on the lines laid down in 1875-76, and carry to an infinitely greater extent the system of inspection and minute regulation then commenced. This is a course which naturally finds favour with many. If regulations are not stringent enough, make them more stringent; if inspectors are not sufficient in number, in vigour, or in knowledge, let us have more and better inspectors.

Above all, let the Board of Trade be so re-organised as to lead rather than to follow every change in shipbuilding, ship loading, and ship managing, and let it for this purpose be supplemented by a staff of trained naval architects, working under thoroughly competent guidance, ready not only to frame general rules, but to apply itself to new facts and proposals, and to grapple with the most novel problems which the progress of events presents. Suggestions of the kind have been made by high authority and have been improved upon by the press. Indeed it seems as though the writers on this subject would wish to substitute for the common care and watchfulness which would frequently save a ship, and which every officer in the Mercantile Marine knows it to be his duty to exercise, the precautionary action of a scientific department calculating by elaborate processes the curves of stability of every ship, preventing the ship from going to sea if those curves are abnormal, and seeing that the officers of the ship understand these elaborate figures, and are prepared to apply them under all the different circumstances in which the ship may be placed.

No one with a grain of sense will depreciate science, whether that of the naval architect, of the engineer, or of the seaman. The

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merchant shipping of the country requires and employs more of it daily. In those ships which are the glory of the British merchant navy and which do little to swell the list of casualties, there is no want of it. The interest of the shipowner and merchant create the demand, and the supply is forthcoming. But there may be a danger in too much science, or rather in calling in novel and abstruse science in cases where experience and rule of thumb have taught what is necessary for practice. It is not necessary to calculate one's centre of gravity in order to stand upright. The philosopher who guided his walk by the stars fell into a well. To some untutored laymen it may not seem an absolutely new discovery to find that a body floating high out of water is liable to capsize. Yachts have before this been known to be unstable before they get their ballast. If the officers of a ship are to be exempted from the responsibility of watching the loading or coaling of their ships, and of keeping the water from flowing into their open ports until the owners or the Board of Trade have furnished them with curves of stability and instructed them in their use, it may be that we shall lose more by the neglect of old and well-known precautions than we shall gain by a scientific analysis of the conditions which render those precautions necessary.

But let us pass over this question and assume that the Board of Trade is re-organised in such a way as to comprise all the science of the country; and then let us consider what it will have to do.

It is made a matter of complaint by competent critics "that the Department has fallen into an admitted state of incompetency by assuming that the only useful work which it can perform is that which can be carried out by rule and formula, and by a staff giving mechanical effort everywhere to the same regulations;" and the remedy proposed is such a staff as mentioned above, acting not on mechanical rules, not telling the shipowner beforehand precisely what he is to do, but applying general principles to the circumstances of each case. The complaint of the shipowners, on the contrary, is that the Board of Trade now act under no fixed rules; that they *do* exercise a discretion in each case; and they will not give them a precise code telling them what is to be done in order to

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avoid interference. How are these opposing criticisms to be reconciled? What is the unfortunate Department to do? The fact is, that the difficulty is inherent and fundamental. In administering a stringent system of prohibitive law, such as the jurisdiction entrusted to the Board of Trade must be, a strict adherence to fixed rules on the one hand, and an arbitrary discretion in the Department and its officers on the other, are alike full of extreme difficulty and alike distasteful to the trade.

No re-organisation of the Board of Trade, no addition to its staff of the ablest scientists in the country will enable it to be at once specific in its requirements, and discretionary in particular cases.

Putting aside this difficulty, which is a serious one, let us consider what the proposal for more extended surveillance involves. The principal function of the Board of Trade is to detain ships which, from whatever cause, are unseaworthy, and to prevent them from leaving port. This unseaworthiness may be due to a multitude of causes, almost too numerous and various to be described. The following are some of them:—

Defects in form and design—
- Of hull;
- Of scantling;
- Of decks and deck erections;
- Of bulwarks;
- Of compartments;

Defects in material.

Defects in workmanship.

Defects in equipments, such as—
- Masts;
- Sails;
- Anchors and chains;
- Compasses;
- Boats;
- Pumps.

Defects in machinery, such as—
- Boilers;
- Screw, shafts, shanks, &c.
- Safety valves.

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Deficiencies in stores, coals, or screw.

And—far the most numerous and important of all—

Overloading.

Improper loading, which is as dangerous as overloading.

Some of these defects may be ascertained and provided against by previous surveys; many of them cannot be ascertained till the vessel is on the point of proceeding to sea. In order to have an accurate appreciation of all of them, and of the requisite remedies, not only the knowledge of the naval architect, on which stress has been laid somewhat too exclusively, but of the engineer, of the seaman, of the skilled stevedore, is required. Further, the action of the Board and its officers, to be effectual and to be tolerable, must be prompt and must be local; the delay caused by references to head-quarters would, on the one hand, allow an unseaworthy ship to escape, or, on the other, be intolerable to the shipowner. If, therefore, the principle of extended and complete supervision is to be adopted; if the Board of Trade are to be held responsible for the safe building, the safe equipment, and the safe loading of all merchant ships; if they are to guide, lead, and control the merchant shipping of the country in all these particulars; and if, as is so powerfully urged, the highest scientific acquirements are required for this purpose: then the Board of Trade must have at every large port, not only one, but many men of the highest professional standing, men so competent to teach the shipbuilder, the engineer, the shipowner, and the ship's husband their proper business, that these latter will gladly submit to their guidance. The mass of work imposed on these officers will be as formidable as its quality. The number of ships which leave the Tyne on a busy day is not less than 70, and of those which leave the Mersey and of those which leave Cardiff scarcely less; and so on at other ports. The number of those which leave London on an ordinary day exceeds 200; on a busy day 300. Unless the staff is large enough to see to all these ships the work will be imperfectly done, and the worst ships, those which it is especially desirable to stop, will escape.

The late Commander Brown, formerly Registrar of Seamen,

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used to tell a story much in point. The late Lord Ellenborough interested himself in the safety and welfare of seamen, and prepared a Bill by which it was proposed that every merchant ship should be subjected to official survey on each occasion of her leaving port. Having confidence in Commander Brown's judgment and experience, he sent the Bill to that officer and begged him to call. When they met, Lord Ellenborough said, "Well, what do you think of my Bill?" Commander Brown replied: "Does your Lordship know the number of ships which leave London daily?" mentioning a number which, though large, no doubt fell far short of the present number. Lord Ellenborough said not a word, but tore his Bill in two and flung the fragments into the waste paper basket.

Let us, for example, take one point on which special stress has recently been laid, viz., stability or stiffness, or, to use a landsman's phrase, the power of a ship to keep or return to an upright position and to resist tendencies to capsize. To ascertain this accurately we are told by high authority that it is necessary to calculate curves of stability, showing what the ship will do under all the various conditions in which the weight of her cargo may be varied or disposed, and by which she may be made to heel over to one side or the other. To make such calculations complete is a serious business, and takes weeks, if not months, of labour. And when the curve is got out its application must be understood, and as its practical application varies with every different disposition of the weights on board a ship, it must be used and applied locally and intelligently on each separate occasion of the ship leaving port. Supposing this to be necessary, then the staff of the Board of Trade must be prepared to see that it is done, and done properly; and not only so, but they must have at every port a man or men able and ready to use and apply these curves of stability on every occasion of the ship's loading, and it will be the duty of these officers to see that the masters or owners do so apply them. How many officers of first-rate ability and acquirements will be wanted for this purpose alone? And if all the different requirements of a ship, with the ever-growing applications of science to them all, are to be treated in the same way it is

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somewhat alarming to think what the staff of the Board of Trade will be. The Department will have created for itself not one but hundreds of Frankensteins in the shape of scientific surveyors: the civil officers will be helpless, and the President himself, already overburdened with technical details, will be a helpless puppet in the hands of his so-called advisers. The expense, already no trifle, will be a heavy burden. The responsibility of the private shipbuilder and shipowner, already, as we shall see, far less than it ought to be, will not only disappear, but will be extinguished without hope of resuscitation. And all for what purpose? In order to swaddle the energy of our mechanics and our sailors in an official strait jacket,—in order to see that the shipbuilder, the shipowner, the shipmaster take no step without the guiding and supporting hand of an official nursemaid. It is not under such a system that Englishmen have become the carriers of the world; it is not by such a system that we have achieved that predominance at sea which is the envy of other nations. But it may well happen, should such a system be adopted, that our energies may be paralysed and that we may lose the conquests which our free energy have won for us.

It is no doubt a beautiful picture,—that of a Government Department with a staff of the ablest naval architects, engineers, ships' husbands, sailors, and stevedores, with an all wise minister ever at their head, and an army of skilled and intelligent hands at every port, guiding, warning, managing, the British Mercantile Marine; taking counsel with the wise; giving counsel to the foolish; checking the forward; hurrying on the backward; rewarding the earnest and the prudent; and preventing and controlling the dishonest and the reckless. But alas! it is a dream; it is not English, and it is not practicable.

But even this is not all. Not only must we, as already pointed out, have at head-quarters men possessing a perfect knowledge of the principles of naval architecture, of engineering, of seamanship; not only must we have at every port in the kingdom men capable of applying these principles at once to every ship that enters or leaves the port; not only must we have enough of such men to be present whilst every ship is being built, repaired, and loaded; not

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only must we decuple our present staff; not only must we spend upon it £500,000 or more instead of £50,000, as at present; we must do much more. Some of the worst evils arise in foreign ports. All our corn and all our timber is laden abroad. We must have, therefore, a large staff of able surveyors at all the ports at which our ships load in the United States, in Russia, and elsewhere. Who is to pay for this? and who is to be responsible for such an army of officials? The Board of Trade have already tried the system of foreign surveys in the case of grain ships, and have, it would seem, been compelled to abandon it.

But suppose those difficulties got over, and suppose an efficient staff established at home and abroad, what shall we have done? We shall have taken the business of shipbuilding and shipowning out of private hands, and have made it a business of the State, and this under the most unfavourable conditions. It will surely cease to flourish, if not to exist, and we shall have saved the seamen whom we wished to protect at the expense of their means of existence.

"You do take my life, When you do take the means by which I live."

(*To be continued.*)

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. II.

FEBRUARY, 1884.

## MR. CHAMBERLAIN AND THE SHIPOWNERS.

IT is difficult to understand why the shipowners should be opposed to Mr. Chamberlain's views in connection with Merchant Shipping. So far as we have been able to judge from the substance of the memorandum issued by his authority,* and the substance of the replies which have been published, it would appear either that the intentions of Mr. Chamberlain are wholly or partially misunderstood by the shipowners, or that the shipowners are of opinion that no evil exists which calls for a remedy at the hands of the Legislature.

Put into a very simple form, some thousands of seamen's lives are lost every year, and a great part of this loss is regarded by Mr. Chamberlain as an evil demanding legislation. It is idle for shipowners, or for anyone to squabble over exact figures. Sometimes the number of hands lost to those employed is 1 in 60, sometimes 1 in 100. Sometimes the actual number of lives lost in the year is over, sometimes under, 3,000. Mr. Chamberlain

* Memorandum published in the *Times*, and reprinted. London: Simpkin, Marshall, and Co., J. D. Potter and Co., and Pewtress and Co. Price 6d.



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says he has reason to believe that a serious part of this loss of life is preventable, and this being so, he feels it to be his duty to make an effort (on new lines, if the old ones will not do) to stop so much of it as is preventable.

It is idle for the shipowners to oppose this view, and it is still more idle of them to base their opposition to remedial legislation, on the very flimsy ground that Mr. Chamberlain may have said that 1 in 60 seamen lose their lives when he ought to have said 1 in 70.*

We believe Mr. Chamberlain's figures are absolutely correct in the sense he used them; but were they incorrect to the very small extent that even his most serious and well-informed critic has been able to discover, the case is not altered one jot or tittle. The fact remains that loss of life is too great. As some steps must be attempted to reduce this loss, is it not better that those steps should be taken before another 3,000, 6,000, 9,000 or 12,000 of our seamen are drowned, and before another Plimsoll arises? and will it be wise for the shipowners to deny to Mr. Chamberlain that co-operation which he has asked for and deserves?

It will, no doubt, be a matter of supreme indifference in the end, whether the shipowners do or do not co-operate. We mean that their withholding from participation in the matter of reform in shipping legislation will not be likely to stand in the way of reform; whilst their co-operation might shape legislation in a way they might desire: but whether they co-operate or whether they stand by, or whether they oppose, the hand of the reformer is upon them, and the legislature may possibly once more interfere in the interests of the safety of the working classes; and once more interfere with the freedom of contract.

If the shipowners maintain a hostile attitude, and if in so doing they get the feeling of the country against them, as they did during the Pimsoll agitation, will they not have themselves, and themselves only, to blame for the consequences?

In our own pages, as long ago as 1872, we pointed out that "insurance" is at the bottom of a very great deal of the evil, and

* See Notes on Mr. Chamberlain's speech, p. 260, of our Volume for the year 1883.

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we state now as we stated then, that armies of inspectors are worse than useless so long as the law of insurance is not dealt with. We believe that the intervention of the Board of Trade at the ports has done good; but not a fraction of the good that a vigorous handling of the insurance law would have effected. Had the legislature been wise when the celebrated scene in the House of Commons was enacted, and had they then begun to deal with loss of life and property at the right end, viz., insurance law, instead of beginning at the wrong end by putting a "pancake" on the ship's side, things would to-day have been very different from what they are, and many lives would have been saved. Underwriters are at last getting alarmed.* Doubts are raised whether by the Classification Societies' rules any sufficient guarantee is given that ships are really fit for the services they are required to perform. There are indeed many underwriters who are considering whether "Lloyd's," as now constituted, does not include too great a preponderance of "Members" who are primarily shipowners and only secondarily underwriters. Shipowners are said to be face to face with unremunerative freights.† Master mariners whose position in the service is undoubted, are said to be out of employment, while some whose certificates have been "dealt with" and who have had no previous experience as masters in the seas they are appointed to navigate, are sent in command. Sailors who escape drowning are leaving the sea and giving place to a lower order of men, and the number of respectable lads going to sea is falling off. Desertions are not decreasing as they ought to do. Why is all this doubt and misgiving? Without attempting to find a solution, we may safely assert that losses of ships and cargoes and lives are regarded by everybody (excepting a certain portion of the shipowners and their organs in the press), as being undoubtedly greatly in excess of the losses warranted by the legitimate risks of the sea service.

To return to the question of insurance, we may safely assume that no one will publicly contend that the practice of insurance should remain as it is, if it affords any shipowner the means of

* See extract from Mr. Danson's paper at the end of this article.

† On this vexed point we refer our readers to an Article in this present number, which inquires into the subject "Do ships pay as an investment?"



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making a greater profit out of a venture when his ship disappears during the voyage, than if she were to arrive safely at her port of destination. The most a shipowner is likely to plead in such a case is that, if the law does allow it, the shipowner as a fact never goes so far as the law would allow him, and never does make a profit out of the disappearance of his ship.

For ourselves, we write and always have written in the interests of the Mercantile Marine generally. The interests of seamen and of masters are equal in our estimation, and, therefore, in our treatment, with the interests of any class of shipowners. It is for that part of the public press which is selected to speak in the exclusive interests of shipowners to prove that profits cannot be, or if they can be are not, made out of the loss of a ship. If they prove this, the case against legislative interference with the law of insurance, in the hopes that that interference will tend to the safety of life and property at sea, will be complete. Down to the present time, however, no shipowner has attempted to prove this; indeed, so far as we are aware, no shipowner has been found who has been able even to assert it.

As a matter of fact, marine insurance, like all insurance, is intended to afford an indemnity pure and simple to the assured. By decisions arrived at by the Courts from time and by modern practice it has come to afford a great deal more than indemnity. All that is now needed is to bring insurance back to neither more nor less than what it was and is intended by the law to be.

If this is all Mr. Chamberlain is about to attempt, and from the Board's memorandum and Mr. Chamberlain's speeches, we cannot find that he contemplates anything beyond this in dealing with the matter of insurance; why, we would ask, is there a universal flutter in the collective bosom of the owners of cargo-carrying ships as evidenced by their organs in the public press?

Then, as regards seaworthiness of a ship, we gather from his public utterances and circulars that in the opinion of Mr. Chamberlain a ship should, when she leaves her port of departure, be seaworthy, that is to say, she should not be overloaded, nor undermanned, nor be deficient in accurate charts and other equipments, in short that she should be fit to encounter the weather and

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seas she is likely to meet with on her voyage, and the master should have on board means to enable him to avoid the rocks and such like dangers.

We presume that no representative of the shipping interest will contend that a ship ought not to be fit for all this, and seaworthy at the time of insurance. At the most he is likely to contend that ships are as a matter of fact fit and seaworthy. That being the fact there can surely be no harm in making the law quite clear, for the law will then merely confirm and uphold what the shipowner alleges is his practice. The shipowner's part of the bargain with the insurers (ratified by the payment of the premium) should in future be that the sum assured is not more than will indemnify the owner against loss; and that his ship is, and is to be kept, seaworthy. As a matter of course it follows that the bargain should be off in the event of failure on the owner's part in either respect.

Both of the points we have referred to, must we think, be accepted, because for the shipowner to reject either would be to reject what he contends is, as a fact, his present practice which he says needs no alteration, and would admit the probability of fraud by making the disrepair or loss of his ship a money gain to himself.

The methods by which the principle (that insurance is to be indemnity only, and that ships are to be seaworthy) can be dealt with by legislation are various, but the contingency involved is that the law inevitably must give insurers—and if need be the State—power (1) to open up the question of value in any case without an allegation of fraud (this is necessary to check insurance beyond indemnity), and (2) to raise the question of seaworthiness.

If it is agreed that insurance should be "indemnity," the first serious question to consider is, what is "indemnity" in the case of the loss of a ship. To arrive at this we must first arrive at the "value" for which "indemnity" is obtained. What is this "value?" We will put a case. A ship cost £26,000 at a time when iron and wages were cheap. She had been profitable, and out of the profits the owners had written off and invested as a reserve or depreciation fund so much per cent. per annum. The original cost of the ship having been £26,000, and the ship having run for

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ten years, the sum thus put aside and invested out of her earnings is £13,000. The ship stood on the books of the concern as being of the value of £13,000, and £13,000 also stood in the books as invested money. The ship was sunk by collision. The value of ships had by this time increased to such an extent that this same ship would cost to build £32,000. What sum ought the owners to regard as value for which they should be indemnified by insurance? The managing owner in that case had insured for £32,000; he had watched the fall and rise in the price of ships. In this case the account at the end of the ten years, disregarding the profits made and spent over and above the sum put by for depreciation, stood thus:—Depreciation fund, invested in the name of owners, £13,000; sum recovered by insurance, £32,000. On the decease of that ship, the owners had therefore to the good £45,000 cash in hand. Is this indemnity? or is it indemnity plus something else? or is it a case of over-insurance?

Those persons who regard this transaction in one light will say it is *not* a case of over insurance. Those persons who regard it in a different light will say it is. Now as this case is a fair sample of every-day proceedings, it is one on which a good argument may be sustained. Those owners who adopt in every-day life the principles underlying this case will say that it is not an over insurance, because amongst other arguments they will suggest that they have a right by insurance to be put into the same position as they were before the loss took place, and that they can only be put into that position by being able to obtain from the underwriter the value of a ship which will do the work of the one lost; that having received premiums of assurance on that basis, the underwriters are bound to place them in that position by giving a ship then worth £32,000 or the equivalent in cash; and that the fact that they get a brand new ship for an old one, is a circumstance over which they have no control, and is a matter outside the argument, since a new ship of the same size will not earn more than the old one.

Those persons who have a doubt whether the case is or is not one of over-insurance will be at least inclined to say: Seeing that the ship originally cost £26,000, seeing that besides good profits for ten years, which the owners used as they pleased, there was

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also in their hands a reserve for depreciation of £13,000, seeing also that £32,000 was recovered from the underwriters, the case has the look of having been a remarkably good investment; and that the collision, seeing that no life was lost, was opportune. Indeed, seeing that there were £19,000 in hand beyond the original £26,000 which the ship cost, those of our readers who doubt whether it is a case of over-insurance, at least are justified in their conclusion that it was a good business transaction.

But there are persons who will probably go so far as to say that it was a decided case of over-insurance—for they will say, "granted that insurance should be an indemnity, it should be an indemnity for what the owner lost, and not a guarantee to start the owner with a brand new ship." These persons say "that the owners of this ship ought only to have been able to recover the value at which the ship stood on his books, that is to say, £13,000, plus the rise in the market value £6,000, or £19,000 in all, and that the reserve fund of £13,000 in hand would make £32,000, the exact sum necessary to start the owner with a brand new ship, and that he had no right to receive £13,000 beyond that sum." These persons say further "that if the shipowner chooses to pay the underwriter in the way of premium, sums for a value in excess of the real value, that circumstance has nothing to do with the question: as in the case of fire insurance on shore it would have nothing to do with it;" and they go further and say "that what is deemed to be a fair measure of indemnity ashore should also be deemed to be a fair measure of indemnity afloat." The shipowner's rejoinder to this argument we have not yet heard; but doubtless it will be heard before long; and if any owner will take the trouble to argue it out calmly from his point of view and send his observations to us they shall appear in our pages.

We can only say on the case we have put, that if it is not one of over-insurance, ships are not as a rule over-insured: whilst if it is a case of over-insurance a large number of the ships afloat are over-insured.

From the insurance of ships we now proceed to say a very few words as to the insurance of expenses and freight, and this subject opens up a far more intricate set of considerations than the mere

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insurance or over-insurance of the hull. A ship whose value is in pounds sterling, say X, may be insured for X + X, and if she is lost her owner will recover X + X, unless which is rarely, or never, the case, there is a distinct allegation of fraud; but besides X + X, the owner can insure (1) expenses incurred and to be incurred; (2) wages paid and to be paid—and (3) gross freight. That is to say, to put a case our non-nautical readers will understand, he can insure his ship X + X, he can, more or less completely, insure expenses incurred and to be incurred in keeping it going, the wages of the workmen he employs to earn his profits, and he can insure the *gross* profits. There are those who say that this also is not over-insurance.

Those persons who doubt whether it is or is not over-insurance think that in the event of a loss early in the voyage there are in the arrangement we have explained several elements which point to the transaction as one likely to be remunerative to the owner, and therefore to open a fine field for "investment." This is doubtless the view taken by those persons amongst the public who, as our able contemporary, *Vanity Fair*, remarks: "no more need a ship than they need a boa constrictor," but who are not averse to a profitable investment in either.

There are, however, third persons who regard the case we have put as a decided case of over-insurance, and they say further that as the owner of the ship can make so much more money if his ship disappears than he can if his ship reaches her destination, his interest cannot be said to be enlisted on the side of safety, and that this it is that needs the attention of the legislature.

In the foregoing remarks we have endeavoured to treat the subject in a general manner, free from technical details and without prejudice; and out of our remarks the following propositions present themselves for consideration, and they can be as well understood by the ordinary layman as by the most profound expert. They are:

(*a*) Ought the assured, by means of insurance, to be permitted to place himself in a much better position by the failure of the venture (loss of ship and crew) than he would have been had the ship arrived safely at her destination? or

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(*b*) Is he by the legal restricting of insurance to ¾ or ⅔ or some other proportion of the value, to be placed in a much worse position by the failure of the venture (loss of ship and crew) than he would have been had the ship arrived safely at her destination? or

(*c*) Is he by insurance to so place himself that he will be in the same position by the failure of the venture (loss of ship and crew) as he would have been had he not embarked in it? or

(*d*) Is he by insurance to place himself in the position he would have been in had the ship (with her crew) arrived safely at her destination?

In the above propositions we have not included any reference to the goods carried in the ship and the amount to which they should be insured. This and the question of "liability," and of "Bills of lading," and many other points in this difficult subject remain for future consideration. We think that for the present month we have in a short space given our readers a very pretty problem to think over. We propose to continue the subject generally next month, and, if we have space, to comment on the less important parts of Mr. Chamberlain's scheme—we mean the proposals as to "Mercantile Marine Courts" and the "Merchant Shipping Commissioners."

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Extracts from "*Underwriting in England, France and America, during the last three years, by J. T. Danson, published by the Administration of the Bureau Veritas*, 1883." Having pointed out that during a certain period the total amount to be insured was not only being reduced, but was also being divided amongst a greater number of underwriters, Mr. Danson says, p. 20:—"The effect was inevitable. Premiums have been pressed down very low; and probably too low to cover the losses incident to any but years as favourable as those we have, until lately, had."

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Having pointed out the considerable fall in premiums between 1875 and 1882, he says, p. 21:—"With these figures before us, and making full allowance for every conceivable reduction of the

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risks, I do not see how we are to escape the conclusion that *the rates in question have of late been driven perilously low;* and it will be observed that those specified cover all the principal sea routes of the world. Of course, it is only the old story—a legitimate reduction of rates hastened and exaggerated by the *competition of men who are blind to the conditions of the business they have entered.* But old stories with disastrous endings should not be retold without stay. We have once more got the usual check—a year of heavy casualties; and with breathing time, and a thinning out of the weaker brethren, we may hope to see more discretion prevalent for a while. But what of the future?"

* * * * * * *

Having referred to losses in other years, Mr. Danson says, p. 24, of losses in the Atlantic:—"When we come to the casualties of 1881 and 1882, we shall find that this excess of loss in the Atlantic is continued.

"It is not sufficiently accounted for by the increase, so far as this can be computed, of the value of the risks afloat in the Atlantic trade. In the 29th number of the annual 'Statistical Abstract,' published by the Board of Trade, we find that the value of our exports to, and imports from the United States in 1872, was £100,570,000, and in 1881, was £139,990,000. If we add, from the same authority, the like values for our North American colonies, these figures are raised to 121 millions and 161 millions respectively. Here is an increase of only 33 per cent.

"The casualties show an increase of four to five-fold. Something may be set down for inaccuracy (not improbable) in the accounts and estimates by which the casualties of the earlier years were arrived at. Something too must be allowed for the fact that ten years have made a considerable increase in the proportionate part of this trade which is carried on in large steamers, and is thus brought within our description of 'large losses.' But with every allowance made, it is difficult to avoid the conclusion that this trade has of late years become increasingly liable to loss. We know that the navigation of the Atlantic involves, on the whole, the severest trial to which ships of all kinds are submitted."

As regards the fitness of ships and the English Classification

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Societies, Mr. Danson says, p. 25 :—" We know that, as regards the sea-going vessels built for classification in the United Kingdom —and by far the greater number of those now afloat were so built —they have been constructed without reference to use in any particular part of the world. They may go anywhere, and do anything. *And when we observe that the builders and the owners of these vessels have a preponderating influence in the committees by which the classification is made, we see why it is so.* Were steamers intended, for instance, to trade in the Mediterranean built so strongly as to be equally safe in the North Atlantic, they would have a margin of strength needless for their particular destination, and their freight-earning power in proportion to their cost would be by so much reduced. And if built without this addtional strength and so distinguished, they could only be so classed as practically to forbid their being used in the more trying localities ; this would diminish their general utility, and might reduce their value in the market. So the matter is met, as is usual in this country, by compromise. Only one set of rules is enforced, but these are so framed as to secure, if possible, tolerable freedom from risk in any trade. Of course, no rules can do more than mark the minimum of strength required. But the classing committees, as they maintain a continuous supervision of the operation of their rules, altering them from time to time as need arises, profess, and no doubt act upon a constant desire, to secure as much strength of construction as is consistent with the needful freedom of trade, In short it is not pretended that the present system always turns out steamers strong enough for any employment to which they can be put."

And as to the general fitness of vessels, Mr. Danson sums up as follows, p. 25 :—" Having regard, however, to all the circumstances, there can be little doubt that to a general deficiency of strength in our trading steamers to meet such trials as are imposed by the weather of 1881-1882, is traceable a large portion of the extra losses before us ; and that this cause is most apparent in the Atlantic trade."

Having given a table showing the causes of loss of steamers, stranding, founderings, &c., &c., &c., Mr. Danson says, p. 32 :—

* * * * * * *

" This table is worthy of careful consideration.

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"There is a palpable diminution of losses by 'stranding,' and an equally palpable increase of the losses by 'foundering' and 'missing.' More steamers go down at sea, or are never heard of now, than was usual five years ago. Add 'foundering' and 'missing' together, as broadly covering what may be deemed a common form of casualty, and compare the two first years with the two last, and the change is marked thus:—In 1878-1879 'stranding' accounted for 120, and 'foundering' and 'missing' for 87. In 1881-1882 'stranding' accounted for 104, and 'foundering' and 'missing' for 62. And these three forms of loss, which include everything but the well-defined causes 'fire' and 'collision,' have increased in the same period, in their proportionate adverse effect, from 158 to 166.

"This undoubtedly gives some warrant to the opinion prevalent of late, *that steamers, either from weaker construction or from an increased tendency to overloading, are getting less fit for the work they are put to.* There has been less (in proportion) of that form of loss which commonly implies bad navigation, and casts suspicion on the officers in command; and more of those forms of loss which imply defective construction, or unfit use of the ships, *and which reflect upon those who build, or those who load them.*"

## THE STABILITY OF MERCHANT SHIPS.

(*Continued from page* 11.)

IN connection with the practical application of scientific knowledge as to stability in the Royal Navy to which we referred in the former part of this paper, it should be remarked that before proceeding to give naval officers particulars of metacentric height and stability, the Admiralty had for years been acquiring information as to the stability of their ships, and comparing it with records of their behaviour at sea. Previously to the loss of the *Captain*, it was not the practice to calculate stability for large angles of inclination, a knowledge of the metacentric height being deemed sufficient. Since that time, however,

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the constructors of the Navy have gone on steadily working at the subject, and the present state of things is the result. In the case of merchant ships, however, the systematic inclining of ships is only an affair of the last few years, and is even now carried out by a few firms only, and by them not in order to give information to owners or masters, but merely with a view to its use in future designs. Indeed, the material for exact comparison of a ship's behaviour at sea with her design and stowage, is not yet in existence. The shipbuilders to whom we have referred incline the ships when light, and proceed from data thus obtained to estimates based upon the hypothesis of homogeneous cargo, and there the matter ends. What appears to be necessary for complete scientific treatment of the question are systematic records of behaviour at sea in connection with known conditions of stowage. How then is this to be obtained, and who is to obtain it? As yet no large shipowner or company has been convinced that the knowledge is worth the expense and trouble of acquiring it. They can get ships designed and built which successfully do all that is required of them, and they will tell you that the shipbuilders who do not trouble themselves about calculations of stability design as good ships as those who do. The successful designs are those produced by progressive improvements upon tried types, while vessels which have been conspicuous departures from former practice such as the *Great Eastern* and the *Livadia* have often been conspicuous failures. The designer of the *Austral* told the Wreck Commissioner that as a matter of curiosity he should have liked to incline that vessel and have learned the exact position of her centre of gravity, but he was far from considering the information of so much value as to induce him to make a serious effort to obtain it. Precisely the same thing would have been said by the majority of the men who design merchant ships, and by men whose practical success in their work justifies their methods. It need hardly be said that such men do consider the stability of ships designed by them, even though they do not make any calculation at all, in fact just as a shipmaster who cannot give a scientific definition of stability yet practically knows very much about it, so the old-fashioned shipbuilder who has not heard of the metacentre may never turn out a crank ship.

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It may be that owing to recent developments in shipowning, ships at times come into existence for whose design no one really is responsible, the dimensions and general conditions being fixed by a promoter of the company and merely the details filled in by the shipowner. It does seem reasonable that some one person or firm should be responsible for the design of a ship, and it might be of some use to register the name of the naval architect on the ship's papers. We do not, however, see that any good would be done in the end by prescribing, as has been recently suggested, that definite calculations of stability should be made, and that no one should presume to design a ship unless he could give an account of her stability. The Government are, indeed, practically asked to insist upon the centre of gravity and curve of stability of each vessel being ascertained when she is built, in order that such information should be available for the Wreck Commissioner in the event of her loss. At present it is of no commercial value to the owner, because no one knows how to use it; and, moreover, everyone can very well do without it. The Board of Trade can only, in any department of its action, enforce what is by actual practice shown to be necessary; it is no part of its duty to teach shipbuilders how to design ships, or stevedores how to stow with scientific exactness,—but to enforce upon the careless and unprincipled, precautions which, by the general practice of the careful and right-feeling, are shown to be necessary. There are many firms which either do not insure their ships, or only insure to very small amounts, and whose interest in the safety of their vessels is beyond dispute. When some of them are convinced of the practical utility of stability calculations, it will be time to consider the necessity of Government interference in the matter.

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## FOOD AT SEA. CHEESE *v.* SALT JUNK.

ANY one who is able to find a substitute for salt junk is a benefactor to our seamen, and it would appear that such a benefactor has arisen in the person of Mr. W. Mattieu Williams, F.C.S., who has lately been delivering the "Cantor" lectures for the year at the Society of Arts to crowded audiences. The substitute is cheese. Not cheese eaten as it is purchased, but cheese to which has been restored the proper amount of the salts of potass necessary to convert it into nutritious and digestible food. It is well known that the chief reason why salt meat is unwholesome and not nutritious is that the salts of potass have been driven out of it in the pickling. It is now known that one reason why cheese is indigestible is because the salts of potass originally in milk are absent from cheese.

As regards the relative nutriment in meat and cheese the Professor tells us that—

"Taking the composition of a whole skinned and prepared sheep or ox as it hangs in a butcher's shop, the amount of nutriment in it is about equal to one-third of its weight of cheese. The fat is about the same in both, but the difference is due to the bones and excess of water. Thus 20lb. of cheese contains as much nutritious material as a sheep of 60lbs. weight and would have the same value as practical nutriment of it could be as easily digested." "Cheese is the most portable of all food, even more so than wheat, on account of the greater value in a given bulk."

Mr. Williams goes on to tell us that the common English or American cheese is the best for purposes of food. Here, then, we have in our midst the most valuable food to be obtained, and it is not used simply for the reason that owing to absence of salts of potass it is indigestible. Make it digestible by restoring the potass, and we have food for our toiling millions on shore, and for those at sea a food which will go far to not only nourish the consumer, but to make him proof against scurvy as well.

Here is the recipe, and we would advise our readers who are master mariners to copy it into their private logs, and those who

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are landsmen to have a copy made for use in the kitchen. Cheese prepared as below is not only good and sufficient of itself for a meal with potatoes, rice, &c., &c., but forms a most useful, digestible, and appetising adjunct to the *menu* of even a "swell" dinner.

1. Cut the cheese into shreds, or grate it, or chop it up fine like suet.
2. To every pound of cheese thus treated add quarter of an ounce of bi-carbonate of potass.*
3. Put the mixture of cheese and bi-carbonate of potass into a saucepan with either three times its bulk of cold water or four times its bulk of cold milk and mix well.
4. Put the saucepan on the fire and bring the mixture slowly to the boiling point taking care to stir it all the time.
5. Having got it to boil, keep it hot until the cheese is melted which does not take long.
6. Turn it out into a dish, and the result gives a beautiful nutritious mixture which thickens like a custard in cooling. This custard may be eaten with impunity even by those persons who would be ill after eating a piece of cheese the size of a nut, and is peculiarly adapted as food for all persons who work hard with either brain or muscle.

Fancy dishes may be made by the ship's cook in the following manner for the captain's and passengers' tables, *e.g.*, take the mixture of cheese and bi-carbonate and water(or milk) given above, and add to it two eggs, white and yolk beaten up together, for every ½ lb. of cheese in the mixture. Put into a dish or a series of little dishes (previously buttered) and bake till brown. This must be eaten with bread or biscuit. Another way is to make the mixture a little thinner by adding a little more milk or water, and to put it in a pie dish with slices of bread laid one over the other. The custard should be poured in cold and left for an hour to soak before it is baked. This dish is a great improvement on the ordinary bread and butter pudding,

"SEA COOK."

* This as nearly as possible puts back into the cheese the amount of potass that was taken out of it in separating (by rennet) the curds in the original milk.

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## SUEZ CANAL v. CAPE.

[The following figures are extracted from an extremely elaborate and careful Table published by our valuable contemporary the *British Trade Journal*, as a supplement to its issue of August the 1st, 1883. Those of our readers who are desirous of learning the particulars of the development of the various stages of the growth of the Canal trade (Calcutta to England) should refer to the Supplement from which this extract is taken; with thanks and acknowledgments to Messrs. Waller Duncan & Co., of Glasgow.—Ed. *Nautical Magazine*.]

| Tons of Goods Shipped per annum. Calcutta to Great Britain. | 1870. Canal. | 1870. Cape. | 1882. Canal. | 1882. Cape. |
|---|---|---|---|---|
| Castor Oil | — | 1,225 | 3,856 | 4,200 |
| Cotton | 1,874 | 9,747 | 15,796 | 6,833 |
| Cow Hides | 4,371 | 12,920 | 16,413 | 387 |
| Ginger | — | 257 | 12 | — |
| Indigo | 708 | 1,795 | 2,760 | 64 |
| Jute | 16,635 | 148,005 | 102,302 | 206,866 |
| Jute Cuttings | 100 | 3,574 | 3,582 | 16,447 |
| Lac Dye | 146 | 818 | 229 | 18 |
| Linseed | 941 | 63,881 | 59,472 | 124,812 |
| Poppyseed | 116 | 7,006 | 2,428 | 8,019 |
| Rapeseed | 12,172 | 72,516 | 29,594 | 22,733 |
| Rice | 1,850 | 36,387 | 42,480 | 18,659 |
| Safflower | 621 | 161 | 62 | 20 |
| Saltpetre | 637 | 13,991 | 4,235 | 4,252 |
| Shellac | 142 | 1,563 | 5,032 | 82 |
| Sugar | — | 5,011 | 6,385 | 1,904 |
| Tea | 4,498 | 8,143 | 55,437 | 705 |
| Teelseed | — | 803 | 398 | — |
| Turmeric | 7 | 2,640 | 543 | 606 |
| Wheat | — | — | 136,756 | 23,768 |
| Total Tons | 44,818 | 390,443 | 487,772 | 440,375 |
| Percentage | 10·30 | 89·70 | 52·55 | 47·45 |
| Grand Total | 435,261 | | 928,147 | |



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## SHIPS AS AN INVESTMENT. DO THEY PAY?

"DO ships pay investors?" is one of the most puzzling questions at the present moment. On the one hand we receive reports stating that the supply of ships is far too large for the requirements of trade; and that freights are ruinously low. On the other hand we have but recently received reports assuring us that ships *pay well;* indeed better than any other form of investment.

Another point (incidentally) raised is this. Is the loss of a ship ever a source of gain to those persons who have invested in her? On this point we receive evidence on the one hand that the loss of a ship can never be a source of profit; whilst on the other hand we are assured, by carefully prepared statements, that at the very worst the loss of a ship cannot result in a pecuniary loss to those who have invested in her.

We have never been favoured with a copy of a balance-sheet (outside those published by some of the large companies which do not pay a dividend) which goes to show (though the fact must in some cases be undoubted), that a ship ever does or ever has worked at a loss; whilst we certainly possess cumulative evidence which goes to show that they are indeed very first-rate investments. Some of the evidence we have received in this sense is as follows:—Mr. * * * of * * * is our first witness. By a very carefully prepared circular he invites us to improve the shining hour by making safe investments in shares in British Merchant Steamers. Mr. * * * "respectfully begs" to submit for our consideration the advantages possessed by this class of property for making "investments" which are not only "sound" but "remunerative;" and he submits his views confidently, from having as he tells us "been able to consider the *same* from *every* standpoint, both technically, as an engineer, and commercially, as to its value as an investment." He points out that a single share may be held by one or more persons. One of the advantages of investing even a few pounds in a ship is clearly that "Merchant Steamers are

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invariably insured to their full, against *all* possible contingencies" thus "rendering the property as safe as anything on land." What is meant is "as 'safe' to the investor," for Mr. * * * informs us that "so great are the risks of the sea that the average life of steamers cannot be much more than about twelve years;" while we learn further on that "the life of boilers if originally carefully constructed, can be economically prolonged for fourteen years." To show how promising and profitable are steamers as an "investment," Mr. * * * goes on to tell us that there are now, (June, 1883), "building" for the port of * * * alone twenty-five "new" steamers. As to one of these "new" steamers "building," Mr. * * * says for a "permanent investment" she is a "splendid property," and he goes on to explain what we "may regard as splendid," that is to say, he confidently "for each £525 share, not less" than £105 to £100 per annum "anticipates a return of say 20 per cent. to 22 per cent. per "annum."

Mr. * * * who speaks with "knowledge and experience," tells also of another steamer, the * * * which is a good investment; he also "invites" us to invest in another screw steamer, which is to be employed in a "special" and "very remunerative trade;" and he assures us that this also will be an "excellent permanent investment." Mr. * * * has opinions nearly as good of other steamers he mentions; but the last one in his list would seem to be specially attractive, for the shares are £100 each and can be had on what may be regarded as easy terms of payment: and this steamer is, we are assured, for an "early" investment one of the best in the market, and promises to be "most remunerative."

But Mr. * * * does not stand alone in making known to the multitude the advantages of taking shares in ships; for we have also received a printed invitation to take shares in "the * * * Steam Shipping Company, Limited." They inform us that Messrs. * * * have had the "privilege" of examining the "actual accounts for recent periods, ranging from four years downwards, of upwards of thirty steamers *of ordinary speed* engaged in the general cargo trade in almost every part of the



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world, and under the management of many different firms, and find them to have paid the shareholders an average dividend of 10½ per cent. per annum on the prices at which new steamers can now be contracted for, the most recent accounts made up to February, 1883, showing dividends largely in excess of that average."

Messrs. * * * of * * * next "commend" to our consideration the prospectus of the "* * *" and the "* * *" Steamship Companies. The prospect they open up is indeed pleasant; in the shape of £110 shares, payable £5 at a time. It would seem to be easier than buying a house in the "Birkbeck," and not much more onerous than "furnishing on the new hire system."

Messrs. * * * recur with satisfaction and pride, as they well may, to the fact that they had a year ago prophetically called the attention of investors to the "solid" advantages offered by steamship property as a "safe and profitable investment," *if* established and conducted on "certain" principles. One of these "certain" principles, we gather, is that a ship shall be used as a "general trader," and not as a mere "regular liner;" another is that if 16½ per cent. profits are made, shareholders shall receive 15½ per cent. And they go on to tell us that the profits of the first voyage of the * * * have just been divided at the rate of 15 per cent. per annum, after paying insurance, and after the "creation" of a reserve fund. The managers of "the * * * steamers," by a prospectus kindly sent us, invite us to take shares in the s.s. * * *. They almost at first warned us off by stating that "for many years dividends have been earned under *great depression*," we were, however, instantly relieved by the words of assurance which follow that announcement, for they tell us "*Yet* 20 to 25 per cent. has been paid," and in proof, the 1880 returns are given of five steamers "conformed" up to and "sustained" at the present time, by the present "* * *" fleet. S.S. * * * 22 per cent.; * * * 22 per cent.; * * * 17 per cent.; * * * 20 per cent.; * * * 29 per cent. per annum. The steamers of the "* * *" fleet that are, "equal to" the above are, we are glad to learn, four

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in number, which "being fully insured, provides shareholders against loss."

Messrs. * * * Brothers, of * * *, tell us that "steamships are becoming favourite investments with an increasing number of capitalists;" in fact we should have been surprised to find that they were not; nor were we surprised to hear that "the large sums at present invested in them, and the rapidity with which their trade is increasing, are *conclusive proof* that such investments are profitable." Moreover, we feel glad and grateful to be assured that even "during the late years of depression in *all* trades, steamships have, under careful management, yielded fair, and in many cases large profits." Messrs. * * * had, at the date of their circular, no less than 23 other steamers which have paid dividends of "not less than 20 to 40 per cent. per annum on the amount of the shares." The names of six steamers are given which have earned per annum 33, 25, 25, 24, 31, and 27 per cent. respectively.

The next firm are Messrs. * * * and Co., of * * *, who, by an advertisement in a newspaper, tell us "Steamships properly managed are *very* profitable property;" "* * * steamships often pay from £20 to £25 per cent.;" "We have four steamers and a sixth contracted for;" "We fully understand the management of steamships;" "We paid our shareholders last year (1882) £24 10s. per cent." But why Messrs. * * * and * * * have judged it necessary to publish a testimonial from a clergyman, is not, on the face of the advertisement, clear. We see nothing hard of belief in their circular, even without the letter of recommendation which they publish, from the Rev. * * *, author of "Studies in Matthew," "Studies in Acts," &c., &c., who writes, "I know Messrs. * * * and * * * well, they are not men to promise what they cannot perform. Many of my friends are shareholders in their ships, and are perfectly satisfied."

We desire to conclude by stating that we have thought it worth while to place the above facts on record, first, because we trust that the evidence they furnish will finally dispose of the question whether steamers, as a rule, do or do not pay, and thus dispel that gloom

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which otherwise might settle on our Merchant Service; and, secondly, because they will remain as a useful and interesting record for our readers fifty years hence, when those who then have the means of wealth may not be so ready to share them with the multitude.

Out of the above "offers," however, again crops up the question whether the loss of the ship does mean a loss to the investor. The circulars lead us to believe that the loss of a ship cannot be a loss to the investor, and we believe all the circulars implicitly. But let us see how this is. We will suppose that a gentleman, or lady, one who has ceased "toiling," and has not yet commenced to "spin," has the good fortune "to have and to hold" a few thousand pounds of capital, and elects to become an "investor" in ships, and say, being cautious, puts £2,000 in a single ship company. The £2,000 is safe, being covered by insurance; there is no further liability; the depreciation and reserve are safe in the hands of one of the managing owners or agents; the balance of the 27 per cent. to 45 per cent., after deducting a proper allowance for depreciation is handed to the "investor" who, meantime, occupies himself in "Studies" which have nothing to do with ships. All goes well until one day, instead of receiving the usual 45 per cent. only, the "investor" receives back the £2,000, plus the 45 per cent. to date, plus the proportion of the "reserve" and "depreciation," for the ship has disappeared! How does that interfere with trade? The investor we have referred to has no trade; "he toils not, neither does he spin;" but he receives 27 per cent. to 45 per cent. on his money when invested, and receives it all back plus something, when the investment ceases by wreck. As probably three-fourths of the people who invest in steamers now-a-days are persons who pursue "Studies in Acts," and who have either no occupation at all, or at any rate who have no occupation directly connected with the prosecution of the voyage of a ship; "interference with the trade" of investors cannot by any means be said to follow the loss of a ship. That loss may interfere, and undoubtedly does interfere for a time with the business of the manager, and of those who receive commission, &c.

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while the ship is afloat; but seeing that the "actual property" in ships is getting more and more into the hands of investors as a sort of "nest egg," and less and less into the hands of those known as "managers," or "managing owners," the "interference with trade" by the loss of a ship (not being a trader on a regular line) must also be growing "small by degrees and beautifully less."

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## MODERN CARGO STEAMERS.

### From a Sailor's Point of View.

SIR,—In giving you my experiences, I do so in the language of an unlettered seaman without scientific knowledge.

If not most carefully nursed in heavy weather, the cargo steamer will most certainly turn turtle. Her immense length of flat side without one atom of *curve*, "sticks" as we express it to an equally flat wall of water. This prevents the "Tramp" rising smartly in a seaway, therefore, it tumbles on deck in tons, doing immense damage to people and property. The former not noticed, the latter covered by that curse of seamen "Insurance." In the "Tramp," the midship section or extreme beam is carried close up to the extremities or rather *butt-ends* of the structure. The master is *ordered* to trim her on even keel to save pilotage, and to offer less resistance arising from the flat floor being "angled." Hence in a head sea, unless nursed, she "sends" fearfully and ships seas that sweep everything before them. In one of the "Tramps" the sea swept away her cabin in midships *three times*, gutting it from side to side, and sending everything over the stern. On the last occasion washing away the mate and three men, in fact the whole watch, as well as the bulwarks on the port-side. The normal position of the Tramp in heavy weather, is, or

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should be, "end on," engines dead slow, with reefed after canvas, sheets in midships to pick her up as she falls off on either side, stand by telegraph to help her a little if wanted. Under any other treatment she will be *missing*. Under this management, and by constant watching, never having my clothes off, I have got across to United States in 21 to 26 days. Tramps are more "tender" when loaded than in ballast, this owing to absence of tumble home. A Tramp when loaded to please the managing owner is nine-tenths *in* the water. In ballast she is nine-tenths *out* of the water. A Tramp in ballast is as dangerous as when loaded. She is too light to face a head wind and sea, falls off, and unless you can pay out 120 fathoms of chain cable she will run away with you and beach herself and all hands. I have had to pay out cable as described in the North Sea. Before a gale in ballast the Tramp is so light that as she rises on the sea the propeller is out of water; she then broaches to, and lays in the trough of the sea. I believe many have unseated their boilers in this manner, and so perished. On the . . of . . . ., I left . . . during a north-westerly gale, a *Mistral;* the . . . . broached to with me having lost her way as described. She laid with her head E.N.E. to E.S.E., and rolled terrifically. This brings me to the question of crew. From eight to midnight mate and *three* men on watch. *Two at the wheel*, one on the look-out. One of these two was the boatswain. He was sent to call the watch, mate taking his place at the wheel. He never returned, "he must have been jerked overboard." Had any man done this he would of course have been hanged, but as he was murdered by the production of modern science as applied to "Naval Architecture" there is no more to be said.

Hundreds of shipmasters with whom I have conversed, maintain that on the question of freeboard the Board of Trade Department is quite correct. Permit me to mention my experience. For two years I sailed with a freeboard of 1·16 inches to the foot depth of hold. Imagine, Sir, my crossing the Atlantic with less than even this murderous freeboard during winter. I did it twice. Where I am at a loss is: How does this state of affairs escape the notice of the Board? for every

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voyage the "side" is entered in Official Log and in Articles. This is what makes "moral cowards" of the average shipmasters. *They think the situation has the sanction of the Board*, hence the apathy of masters. On one occasion the Board's chief surveyor raised my "Plimsoll" = to 80 tons *less* cargo. The change in my vessel was simply wonderful. I and my crew are indebted to that officer for having in very heavy weather less anxiety than I and they have had for years.

Now, Sir, I believe I shall incur your displeasure, for I am about to tell you that which I would insist on if I were in the position of the Right Honourable and courageous President of the Board who has earned the love and gratitude of every British seaman. I should insist on a standard co-efficient of fineness for every cargo steamer made imperative by Act of Parliament. Now make the Act retrospective by raising the freeboard of the present Tramp *until* her displacement corresponds with the new type. Of course there will be a *yell* of Managing Owners *re* Freedom of Contract and the Liberty of the Subject. The managing owners and builders have had freedom and liberty enough, God knows. Capital has been poured into their hands for the asking to the tune of £85,000,000, and they have produced a machine for the manufacture of wives and children into widows and orphans. The system has drowned seamen that a quarter of a century will not replace, even if our youth go to sea in the olden proportion, which is very doubtful. The system has done more than England's greatest enemy has ever done—it has stricken terror into the heart of the British seaman. It has moreover fooled our statesmen into the belief that our immense increase in shipping is due to a legitimate increase in our carrying trade.

I will now, Sir, crave your indulgence for errors of composition and orthography, and conclude with the only apology I can offer you for the prolixity of this communication. I am an Englishman, and after 33 years at sea, I grieve to have lived to witness our noble life-like vessels—vessels that the seaman loved next to his wife—ousted from the ocean by the cowardly-looking thief, the "Ocean Tramp." England must produce another Cromwell in shipping, or she will need the pen of a future Gibbon to

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record the "decline and fall" of her supremacy on the ocean. I have, &c.,

MASTER MARINER.

[*N. B.*—It is evident that the writer, as he himself avows, has no scientific knowledge of Naval construction, and as his complaints point rather to deep loading than anything else, we trust the load-line Committee will put matters right for him. There is one point which he notices and which now seems to be the generally received opinion, viz., that many ships have not been called into existence because they were wanted for trade; but because managers were often able to obtain a handsome sum to begin with (say £3,000 to £6,000 down), and commission on gross freights afterwards.—Ed. *N. M.*]

## NOTED PASSAGES OF AMERICAN CLIPPERS.

THE "Brilliant Era of the Clippers" was short though brilliant. It extended from 1840 to 1855. We are reminded of this fact by an article contained in *Harper's Monthly Magazine* for January, 1884. The article itself is pleasant reading though discursive. The facts are all over the pages. We have picked out a few of the facts given with such information as the article contains as to the length of passages, &c., &c., and have arranged them in as precise a form as the information given allows. Those runs against which an asterisk is placed in the following tables are given by our contemporary as the "fastest on record."

We shall be glad if our readers who have authentic records of any fast passages made by British steamships or *sailing* ships would extract from them and send to us precise particulars in a similar tabular form, so that we may compare them with the passages recorded during the "Brilliant Era of the Clippers." We do not need particulars of any voyage unless it gives a "record" better than that given in one of the columns 4, 5, or 6 of the following

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table. We do not mean better than *all* three columns together, but better in any respect than the record given in *any one* of those columns.—Ed.

| Name of Ship and Tonnage. 1 | Built. 2 | Run between 3 | Days occupied. 4 | Average per day, Statute miles. 5 | Greatest run, noon to noon, Statute miles. 6 |
|---|---|---|---|---|---|
| *Houqua*, 706 | 1844 | Shanghai to New York | *88 | ..... | ..... |
| *Samuel Russell*, 940 | ..... | Whampoa to New York | ..... | 226 for 30 dys | 318 |
| ,, | | New York to Canton | ..... | ..... | 328 |
| *Swordfish*, 1,150 | 1851 | Shanghai to Frisco | *31 | 240 | ..... |
| *Comet*, 1,209 | 1851 | Frisco to New York | *76 | ..... | ..... |
| *Surprise*, (.....) ? | ..... | New York to Frisco | *96 | ..... | 284 |
| *Flying Cloud*, 1,782 | 1851 | Frisco to New York | *84 | ..... | *433¼ |
| *Northern Light*, (.....) ? | ..... | Frisco to Boston | *77 | 200 | ..... |
| *Sovereign of the Seas*, 2,421 | 1851 | Honolulu to New York | *82 | ..... | 330 |
| ,, | | New York to Liverpool | 13¾ | ... .. | 340 |
| ,, | | Frisco to New York | 22 | 284 | 419 |
| *Dreadnought*, | 1854 | Sandy Hook to Rock Light | 18½ | ..... | ..... |
| ,, | | Sandy Hook to Queenstown | 9¾ | ..... | ..... |
| *Architect*, 520 | 1847 | Canton to London | 107 | ..... | ..... |

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## TRADES' UNIONISM AND SEAMEN.

WE have received information from which we gather that a very serious and determined movement is afloat amongst seamen with a view to ensuring a better manning scale. We understand that the seamen and stokers are getting alarmed and dissatisfied at what they regard as the too few hands carried and the hard work thrown on them.

The complaint is that in steamers, some of large tonnage, there are only two seamen on deck, one as a look-out and one at the wheel—and that if either has to leave his post for anything the other one has to take his place; so that, practically, only one man is on the deck in addition to an officer. This they say leads to overwork and danger to life. They also say that shipowners in these ships obtain deduction for crew-space for crews often three times as numerous as the crews the ships actually carry, and they think that the ship ought to carry the crew for which the owner obtains deductions from the tonnage dues. They also say that some sailing ships are now sent on long coasting voyages with a crew of two hands all told. The seamen's and firemen's grievance is also that they have to work regularly too long at a stretch instead of by the old system of "watches," and they intend to press for inquiry as to the manning of merchant ships. We do not know what success is likely to attend this movement, nor as yet who are the chief movers in it—but we think it right to give our readers such information as has reached us. There can, we think, be no doubt that some ships are disgracefully undermanned, and if this movement results only in bringing that minority of owners up to the standard of their more conscientious brethren in this respect, it will be the means of doing real good. Circulars issued to the public contain statements that 15 per cent. to 40 per cent. is by no means an unusual profit in the year for steamships. As the profits are so large the men say that many owners can afford to be more liberal than they are in regard to the number of hands carried both on deck and in the engine-room. Seamen have hitherto been wholly unsuccessful in regard to any movement savouring of

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Trades Unionism; but in the north-eastern ports the machinery of the Miners' Unions may possibly be made available for them. It is a noteworthy fact that miners of Northumberland and Durham have always professed to take a very great interest in the welfare of seamen.

## MR. CHAMBERLAIN AT NEWCASTLE.

ON the evening of the 15th January, 1884, Mr. Chamberlain received two addresses, one from the Northumberland miners, in which the following passage occurred :—

"As President of the Board of Trade, we have observed with great satisfaction that you have ever shown an earnest desire to maintain the civil rights and to protect the lives of our seamen—a body of men whose calling exposes them to great dangers, and renders them politically defenceless by depriving them of all direct, and leaving them but little indirect, representation in the House of Commons."

And one from the Durham miners, in which the following passage occurs :—"We also sincerely thank you for your energetic action on behalf of our merchant seamen. The employment of the miner, like that of the sailor, is full of peril; and, as sharers in the perils of dangerous but necessary occupations, we thank you for the watchfulness you are exercising on their behalf. There are dangers in connection with both occupations which no human forethought can provide against. These will always have to be faced, and their painful consequences accepted; and from these the English workmen will never shrink. But we have a right to expect that these dangers shall be reduced to a minimum by the exercise of every care and the application of every modern scientific appliance; and seeing that you are labouring in this direction, we cordially welcome you amongst us, as the friend of humanity."

Mr. Chamberlain, on rising to reply, was received with loud and prolonged cheering. He said :—Before I ask your atten-

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tion to matters of higher and more general importance, you will, I hope, allow me to express, in words necessarily feeble and imperfect, my deep sense of the cordiality of your reception, and of the kindness of the addresses which have just been read and presented. I will not pause to deprecate the generous feeling which has led the authors of those addresses to over-estimate any services which I may have it in my power to render. They have not mistaken the spirit in which I have endeavoured to approach the performance of public duties. (Cheers.) They have not underrated my desire to be of use to those who have given me their confidence. (Hear, hear.) I value this reception, and this expression of your kindness, because I have always followed with deep interest and sympathy the politics of these northern counties (hear, hear), and because I recognise in the love of freedom and the sturdy independence of the sons of the Tyne a kindred feeling to that animating the great constituency from which I come (cheers), in which I have learned all the articles of my political creed, and which has trusted me to represent in Parliament the great principles to which it has been so long and so honourably attached. (Cheers.) I noticed in two of the addresses some passages to which I should like to make a momentary allusion. They are those in which the miners speak approvingly of the efforts they thought I was making to secure the rights and security of those at sea (hear, hear), and in which they speak with sympathy of the perils of a trade in some respects more dangerous than their own. (Cheers.) This is a matter very near to my heart. (Cheers.) The loss of life at sea is appalling. (Cheers.) Last year, of all the merchant seamen belonging to British ships in the United Kingdom, one in 60 met his death by violent means. That was exclusive of those who perished in the fishing industry, and exclusive too of those who perished in colonial ships, with which we have nothing to do. Altogether 3,500 men came to a premature end, many of them in the prime of life, and many of them leaving behind them widows and orphans to mourn their loss. (Cheers.) Now, this is a state of things which we all must deplore. I have felt it my duty to make every inquiry in my power which can throw daylight upon this subject. I have appealed to the able and

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impartial judges who have the largest experience in connection with inquiries into those disasters; I have applied to underwriters who know something of the causes of them; I have applied to my own officers and to the able and energetic surveyors of the Board of Trade who are charged to watch over the comfort and security of our seamen and the safety of our ships at our various ports, and who perform their duties, I will venture to say, arduous as they are, with great discrimination and courage. (Cheers.) And I have applied to many of the largest shipowners in the United Kingdom, to men owning among them a very considerable proportion of the whole tonnage of the Mercantile Marine, and from one and all I have received the reply that in their opinion many of these losses are preventable. (Cheers.) I bring no accusation against any one; that is not necessary. But say that I should be unworthy of the confidence you have professed to feel in me if I allowed one single day more than I could help to elapse before I do all in my power to remedy the state of things which is the cause of so much trouble and misery. (Cheers.) I invite assistance in the work which I have undertaken from every humane man, whatever his profession may be, and especially I invite the assistance and support of the constituencies in the great shipping ports of the kingdom. I never stand before such a meeting as this—I never come forward to address thousands of my countrymen on great political questions—without gaining courage and strength for the work which is before me (cheers), without renewing that enthusiasm in the service of the people which is absolutely necessary to all who represent your claims or your rights. Without your strenuous support it would be a thankless task to give up the ease of private life for all the care and obloquy which necessarily attend public work, and it is the sense of being sustained by unnumbered hosts of friends and fellow workers (cheers) which enables public men to fight your battles successfully, and to overcome the difficulties and to despise the slanders which every public man has to encounter.

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On the 17th January, 1884, at the invitation of the directors of the Marine Insurance Associations of the Tyne, Wear, and Tees, Mr.

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Chamberlain was entertained at luncheon in the County Hotel, Newcastle. Mr. W. D. Stephens occupied the chair, and among those present were Mr. John Morley, M.P., Mr. J. C. Stevenson, M.P., Colonel Gourley, M.P., and Mr. James Laing. The Chairman, in proposing the health of Mr. Chamberlain, laid before him the views of the local Marine Insurance Associations on matters affecting shipping interests.

Mr. Chamberlain, who was received with cheers, said, in reply, —I am very much obliged to you for the hearty welcome you have been good enough to give me. I think that I should be very cowardly indeed if I were afraid of you, and if I had any fears before, I can assure you that they have entirely disappeared. I am your guest to-day, and let me say that if I had not a very great respect for the representatives of an industry the enterprise and ability and skill of which have conferred so much glory upon British commerce I should not have accepted your hospitality. On the other hand, if you had not some confidence in my fairmindedness and my desire to do what is right, you would not, I suppose, have invited me to come here. (Hear, hear.) I call your attention, in the first instance, to two points which I think result from recent discussion. In the first place, I think you will be inclined to believe that in all that has been said in behalf of the Board of Trade there has been no intention to make any charge against shipowners as a class. (Hear, hear.) In everything that I have said and done—and as it has been printed you can refer to it for proof—I have carefully guarded against making any such general and such unreasonable accusations. I have always distinguished between the great majority in this industry, which is as honourable as any other, and the unscrupulous minority, against whose proceedings we have to guard. The second point which I desire to impress upon you is the necessity in your own interests that you, the respectable portion of the trade, should not allow yourselves, owing to any mistaken *esprit de corps*, to shelter the black sheep who must find a place in your midst, as they do in every other trade in the country. With regard to the proposals which have been made to you by the Board of Trade, I invite your criticisms. I do not ask you to spare them, but I beg that you

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will not mistake the spirit in which those proposals have been made. My friend in the chair has asked me to show confidence in you. I claim that I have done that in a way which is unusual with anyone in my position. I do not believe you can point to any case in which any of my predecessors, or anybody occupying the responsible position of a Minister of the Crown, who intended to propose legislation, has consulted the parties particularly concerned, especially the persons against whom the legislation might be supposed to be directed, before he has completed his plans and submitted them to the House of Commons. I have asked for your suggestions and criticisms, and I hope, with all humility, that I shall be able to profit by them. (Hear, hear.) Let me say that I have done this in the belief—I think well-justified belief—that it is not only your duty but your interest to assist and to promote the success of all reasonable and proper proposals. It cannot be to the interest of the respectable members of a great trade that they should be run off the lines of the commerce in which they are engaged by their more unscrupulous competitors. (Hear, hear.) I have received a great number of replies—I may say I have now got the majority of the answers—from the persons whom I consulted. I have given them the most careful consideration, which the importance of the interest concerned fully entitles them to. Speaking generally, I will say that they disclose very considerable difference of opinion between the shipowners and the Board of Trade. But they also disclose almost equally important diversity of views, between the shipowners themselves. (Hear, hear.) Still, these differences, of whatever nature they may be, are differences chiefly as to matters of detail (hear, hear); and when we come to principles, I do not find there is any such opposition as should render it impossible for us to reconcile the apparently diverging views. (Cheers.) I believe that proceeding on these criticisms it would be possible to propose legislation which, if it does not give satisfaction to everybody, which is perhaps impossible, yet may be in the main and on the whole generally approved. (Cheers.) Before going further, I may call your attention to one point in these replies which is of very great importance. I am afraid that shipowners generally —those in the North as well as elsewhere—are a little inclined to



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underestimate the gravity of the case which I have brought before them. ("No, no.") I hope it is not the case; but I am here to speak my mind to you, and I shall lay before you the reasons which have brought me to that conclusion. I am afraid that many shipowners, at any rate, are inclined to look upon this loss of life, which certainly they regret as much as I do, as the inevitable incident of a dangerous profession. ("Hear, hear," "Quite so," "Yes.") I am confirmed in that impression by the gentleman who says "Yes." What I want to say is this—if they are right, we need hardly carry the discussion further. If it is the fact that this loss of life, great as it is, deplorable as it is, is necessary and cannot be avoided, what is the use of talking about further legislation? No change will be in that case required, and therefore it becomes urgent, in the first instance and before proceeding any further, to examine into this question, and to see whether or not there is a state of things which constitutes a wrong, for which we have to find a remedy. (Hear, hear.) In the first place, remember what it is that I have said, what are the statements which have hitherto been very general on my part, on which I have based my demand for further legislation. I have said that the total loss of life at sea is appalling. No one can deny that. The loss of over 3,500 lives in the British Mercantile Marine alone, independent of fishing and colonial vessels, everbody will admit to be appalling. Then I have gone on to say—and this is the point in dispute—that a large proportion—I do not say the largest proportion, neither do I estimate the exact proportion, but a large proportion of the loss of life is preventable. (Cries of "Oh!" "Question!") Precisely, that is the question to which I am coming. Let me say this in regard to these two statements of mine—that they have been in some quarters entirely misapprehended. It has been said that is a charge of wholesale murder against the shipowners of the kingdom. I hope you do not believe for a moment that I am so unjust and so silly as to bring any such charge as that. (Hear, hear.) I will say this—that I do not believe there exists a man in this kingdom who is so utterly lost to every sense of what is right as to send his ship to sea deliberately with the intention of drowning his sailors. What I charge against

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shipowners, if you call it a charge, is this—I charge the minority of the shipowners—I hope and I believe it is a very small minority—with gross neglect of the precautions which a majority of the shipowners think to be reasonable and necessary. But in addition I assert—(and this is not exactly a charge, but it is even more important than a charge)—I say that the state of the law at the present time is such that shipowners would be something more than human, they would be angels from heaven, if they were not induced towards a false sense of security which may tend to prevent them from taking all the precautions which science and reason show to be desirable if all possible preventable loss of life is to be stopped. That is the extent of the charge or statement I make. This is not an invidious charge, not a charge which involves a heavy moral responsibility; it is a charge upon which has been based a great part of the legislation affecting the commerce of the country. Take the legislation affecting railways, for instance. The railway companies of this country are subjected to the provisions of numberless Acts of Parliament intended to secure the lives of persons employed on the railway and of passengers. It is believed that without this legislation, though the railway companies are, of course, amenable to all moral considerations, they would still not take all the precautions they ought to take. Yet in the case of railway companies the statistics show that the loss of life amounts to something like, on the average, one in ten millions of passengers; and yet, in order to save the life of the one in ten millions, Parliament has thought it right to impose all these obligations and has required all this supervision and control. But let us go a step further. Look at the case of all the manufactories and workshops of the kingdom. Nobody, I suppose, pretends that all the manufacturers of England were accused of murder when Parliament thought it necessary to put on all sorts of regulations and restrictions with regard to machinery and the health of the people at work. It was thought desirable to impose regulations, and I, as a manufacturer, say it was a good thing, and that we manufacturers now do things which we did not think it was necessary to do before, but which we now see to be reasonable and right. In the case of



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the factories and workshops of the United Kingdom, the loss of life previously to this legislation did not, I believe, exceed one in ten thousand of the workpeople employed. I go a step further. The regulations to which all mine-owners are subjected are extremely onerous. They add materially to the cost of the production of coal. Yet in the case of mining, which is a most dangerous and perilous trade, coming very near in its position to that in which you are engaged, the loss of life among those employed was never, I believe, in the highest year, more than one in 315 of the persons employed. In the case of the Mercantile Marine of this kingdom, as I said last night, one out of every 60 seamen employed met with a violent death in a single year. Therefore, I hope that you do not feel hurt, at all events, when it is deemed necessary to consider what are the necessary restrictions, by which we may obtain a greater amount of precaution, in order to reduce the loss, which is greater, unfortunately in this trade than in any to which I have referred. The question, of course, with regard to this loss of life in ships is how far is it preventable? (Hear, hear.) I think I observe in replies which I have received, and I may take as one of the most effective and able of those replies the letter from Mr. Dunlop, and let me say in passing, every one knows Mr. Dunlop to be a man largely engaged in this trade, a man of the most undoubted honour and integrity, a man whom I would as soon accuse of any dishonourable or wrongful practice as I would accuse myself. (A voice.—"What is Mr. Dunlop?") Mr. Dunlop is of the Allan Line; he has published a pamphlet which I dare say is in the hands of many gentlemen present, and which really sums up most of the arguments which I have received also from other quarters. Let us see what Mr. Dunlop thinks. He excludes every consideration of other causes of loss except those due to foundering and missing. That is the first thing, but I cannot possibly accept that view of the case as being a right and a fair one. It is not the fact that foundering and missing are the only causes in which loss arises from causes which may be prevented. For instance, let me take this last year. There were something like 1,100 losses of life at sea in cases other than those of total wreck. Many of them

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certainly were preventable. For instance, supposing the case of a ship being overladen, it meets with a sea that washes its deck, and the watch is swept away and is never heard of again. That is a case in which the loss of life has taken place from a cause which is preventable, and one which ought to be prevented. (Murmurs of dissent.) Do be reasonable, and do not misunderstand what I am saying. I am not saying that in these cases the losses necessarily could have been prevented; but what I am saying is that they are all cases in which it is possible to conceive that some of them might have been prevented. (Hear, hear.) Let us go on. Take the cases of stranding. No doubt the cases of stranding are in many cases due absolutely to bad management, for which it may be said that the owners cannot possibly be responsible. On the other hand the owners might be responsible if they have not taken sufficient care in the selection of captains. The owners might be responsible if they have given orders to their captains to make quick voyages without taking sufficient care. (Cries of "Nonsense.")

The CHAIRMAN.—I must ask you to remember that we are all gentlemen here, and that Mr. Chamberlain is our guest. (Cheers.)

Mr. CHAMBERLAIN.—I am here at your invitation. (Hear, hear.) I am here to say to you face to face what I am perfectly ready, if you prefer it, to keep for some other place, and to say behind your backs. But I have thought it better that we should arrive at the truth by open discussion. (Cheers.) I have only to add this—I am sure you will not find in anything that I have said, or in anything I am going to say, one word which, properly construed, can be considered as offensive to you. (Hear, hear.) I go on to say that strandings are cases which may be—I do not say that they are—preventable. Some gentlemen seem to think that is an unreasonable supposition. Well, I will quote an authority which may not be considered prejudiced—Mr. Danson, underwriter, who has recently published a pamphlet intended for underwriters. Mr. Danson is opposed entirely to the proposals of the Board of Trade. He cannot be considered a partial and prejudiced witness. Mr. Danson says:—"Strandings may be a mere escape from founderings, and they are sometimes sought as such. (A voice, "Sought?") "Sought

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as such "—that is what Mr. Danson says. He says—I am quoting of course, without his book, and I am not asking you to assume the exact accuracy of the words—but the effect of what Mr. Danson says is that strandings may be sought as an escape from founderings; and, of course, it is perfectly evident that is the case. ('No, no.') Then again, there are cases of collisions. Here, also, I will say that in the great majority of instances, I do not doubt that they are due to causes which no skill and no care or precaution on the part of the owners could possibly avoid. (Hear, hear.) But if an owner should say to his captain, "I look to you to make a quick voyage, and if you do not make a quick voyage you will lose your situation." (A voice—"Never," and "Oh yes!") If the owner should say this to his captain it is surely clear that in that case he would be answerable. The captain might press his ship at greater speed than he ought to do in the case of a fog. What I have said, then, comes to this—that in any consideration of the total loss of life at sea it is not fair to exclude from the possibility of preventable causes those other causes besides foundering and missing. But let us deal with foundering and missing also, with cases where we should imagine that we should find more frequent instances of neglect of precaution. Here, also, I am going to call your attention to what Mr. Danson says upon the subject. In the pamphlet to which I have already referred, he alludes to the fact that in recent years founderings and missings have considerably increased, while strandings have diminished—that is, in proportion; and he goes on to say, "This gives some warrant to the opinion that steamers, either from weaker construction or from increased tendency to overloading, are getting less fit for the work they are put to. There has been less in proportion of the form of loss which only implies bad navigation and casts suspicion on the officers in command, and more of those forms of loss which imply defective construction, or unfit use of the ships, and which reflect upon those who build or those who load them." And he goes on to say, "With regard to sailing ships, the decrease in strandings is from 45 per cent. to 34 per cent.; the increase in foundered or missing from 38 to 52 per cent." Mr. Danson sums up:—"More ships

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are going down helplessly at sea, and not in bad seasons only, for it is the proportion of ships so lost in successive seasons that we are looking to. This means, if it means anything, that they cannot be kept afloat for the voyages they have been put upon. The lesson of these facts is plain—bad weather bearing upon ships too weak for their work." Well, then, I have quoted Mr. Danson as being an important person. Let me tell you something which occurred to me not very long ago. I was in the presence of a number—rather less than 20—of the principal shipowners of the kingdom. I should think that among them they owned or managed or controlled some millions of tons of British shipping; and I asked them a question. I said, "Gentlemen, do you consider that a ship which is well built, well manned, and properly loaded ought ever to founder or go to the bottom in consequence of stress of weather?" Some of the gentlemen present, the majority of them, said "Never." One or two of them said, "No, we bar that, because there must be causes—as, for instance, if the shaft breaks, or an accident to the machinery occurs—that would produce a catastrophe for which nobody could possibly be answerable." I have to call your attention to it as a serious fact that will be brought out in these discussions, that these gentlemen of great experience and knowledge, and with vast property at stake, told me distinctly that these cases of foundering ought not to occur in the cases of vessels well built and well managed, and properly loaded. (Cheers). I have only one more piece of evidence to give on this subject. What I want you to have is the strength of the case on the matter. It may be you will give me an answer to it. Before I came here I wrote to Mr. Rothery, the Judge of the Wreck Commission ("Oh, Oh")—Mr. Rothery is a Judge of the land, and I do not suppose that all his decisions give satisfaction to all the persons that come before him (laughter), but at the same time he is a man of great ability. He is a man also whose position makes him absolutely disinterested, and he is a man, I tell you this, to whose opinion the public, at all events, will attach very great importance. ("No, no.") I asked Mr. Rothery what was the result of his long experience with regard to the cases

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which came before him. He has sent me a letter in which he gives me reasons for the conclusion at which he has arrived. I will only trouble you with the conclusion, which is in a single sentence. He says:—"The conclusion to which I have come is that, excluding of course collisions, the loss of one-half at least of the vessels which founder or are missing is due to preventable causes for which the owners are more or less directly responsible." That is the case which I say you have to meet. I have put it before you exactly as if I were speaking to an audience entirely unconcerned in the business, and I trust to your sense of fairness, to your sense of justice, and your sense of the importance of the interests concerned, that you will favour me with any observations upon it. I can assure you I should give them full consideration. (Hear, hear.) We have made certain proposals. What are the objects we had in view in making these proposals? In the first place we want to be assured that it is an object of pecuniary interest that every ship should perform its voyages safely. In the second place, if we can attain the first object, then we think we can give effect to what will be the reasonable desire and demand of the shipowners, that there should be some relaxation of the supervision and control which in some cases they have found so irritating and objectionable, and which we unfortunately, acting for the public interest, have found in so many cases to be altogether ineffectual. In regard to the first object we had in view we have, in the Memorandum already published, suggested the difficulties caused by the present state of the law without absolutely putting before you any proposals for the remedy of the evil. We have called attention to the state of the law of liability and insurance, and I have observed that there has been a good deal of apprehension as to what our intention might be with respect to this. The object in the memoranda which have been published has been to show the cumulative effect of a number of provisions, all of which tend to relieve the shipowner from liability. But we have never said and never intended that all these provisions should be altered or repealed, and especially we have never intended to alter that provision which limits the liability of the ship-

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owner by the £8 and £15 per ton. (Hear, hear.) I had thought at one time it might on the whole be more reasonable to go back to the old principle alluded to by the chairman of the value of a ship, but I see great difficulty in making the change, and, on the whole, I believe the existing law has worked fairly well and given satisfaction to the interests concerned. Therefore, the proposals I shall make to Parliament will contain no references to this particular matter. But I do intend to propose to Parliament, I tell you candidly, to apply to shipping the provisions of the Employers Liability Act. It is urged that there is a great difference between the shipowners and the employers on shore. Any arguments which can be used upon that subject I am sure will have the fullest consideration, both from myself and also from Parliament, but I find it difficult to see that there is a real distinction between the two. If, for instance, my coachman in London runs over my groom in the performance of his work, the law makes me answerable to my groom for the injury he has received, and the law makes a mine owner who has never gone into his mines and knows nothing about them answerable for the carelessness of his foremen if his workpeople who come by their death or are injured in consequence of their carelessness. I cannot see any distinction between that law and the law which would make a shipowner answerable to his seamen for loss of life if the loss of life were due to the negligence of the captain, whom they are forced to obey. I admit that it may be a hardship to the shipowner that in such a case he should have to provide some compensation to the wives and the family of the seamen, but it is a greater hardship still to the wives and families of the men killed that they have no one to look to when the breadwinners of the family are destroyed. Well now, I come to consider the very important—the all-important—question of insurance. You appear to think that over insurance is uncommon, and that is the opinion of shipowners generally. I listened with great respect to what Mr. Stephens has told us; that is very good as far as it goes. It may be taken, no doubt, as absolutely correct with regard to the experience of the clubs represented here to-day. It may be true, as Mr. Stephens says, that they would not insure any ill-found, unsafe, or unseaworthy ship; but there are such ships and they do

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get insured. ("Very few.") They may not be insured in your clubs, but they are insured somewhere else, and legislation, bear in mind, is never passed to control good people. It is to control the bad. You have a law against murder, although there are very few murderers in this country, and you must have a law against persons who offend in regard to these questions, although against a large portion there is no possible complaint. But I do not care very much to argue whether over-insurance is common or not. I shall have a great number of facts to lay before the House of Commons on that subject. In the meantime I say the universal opinion of shipowners appears to be that it ought not to exist. Nobody defends it, and what the shipowners say is that it does not exist now. Well, if so, no legislation on that subject will do any harm. But as we all agree that it is a thing which cannot be justified, that it cannot be right that a man should make a profit out of the loss of his ship, we have exactly similar opinions on the matter; and under these circumstances I do not think there will be any difficulty in so framing my proposals as to meet your approval. And let me ask you to believe that my proposals are not, as has been said, the proposals of a mere Radical agitator who knows nothing whatever of this business. I am not the first person who has touched upon this question. I am not the first person to whom these facts have been brought home. I am only following the steps of the late Conservative Government. To their credit be it said (hear, hear) they brought in a Bill to deal with this very question, and although the pressure of business prevented their going on with it, their opinion was sufficiently clearly expressed. Let me read a word from one of the greatest legal authorities in the country, who is none the worse because he happens to be a Tory peer. (Hear, hear.) Earl Cairns, speaking in the House of Lords on the 9th of August, 1875, said, the more it was looked into the more the question would be asked whether if in the case of fire insurance the owner would not be allowed to receive more than would compensate him for the loss sustained, the insurer of a vessel may contract beforehand that there should be no inquiry into the amount of damage, but that the gross absolute share should be paid over, no matter how much that

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gross share may exceed the loss? He (Earl Cairns) went on to say that this subject would be found to be very closely connected with the question of unseaworthy ships. I do not propose that you should be prevented from assuring yourselves reasonably against loss. I do not object to your insuring yourselves against the full amount of the loss that you may possibly sustain by no fault of your own; but I say insurance at sea, like insurance on land ought to be a contract of indemnity without any possibility of a total loss being turned into a profit by its means. (Hear.) I will go on to consider the second part of the proposals which we have made. With regard to this, do let us understand each other. They were offered to you—the shipowners of the country—as a boon and a concession. They were devised with the intention of relieving you from supervision, with the intention of lessening and minimizing to the utmost possible extent that I believe public opinion will allow the control of the Board of Trade. If on careful examination, and after the explanations which I will offer to you to-day, you think these proposals in the amended form in which I will place them before you do not meet your views, do not let there be any difference of opinion between us. (Hear, hear.) We are not in the slightest degree wedded to them (cheers), and we will withdraw them without a moment's hesitation. (Loud cheers.) They are offered for your advantage, and not for ours; they are offered not because they are necessary for the public safety, but because we think the public safety can be secured in another way, and that under these circumstances the present rules and regulations have become less necessary. If you prefer the present rules and regulations to the amendments which we have proposed, you have only to make that clear, and I promise you you shall not hear anything more about the new proposals. (Cheers.) Now let us consider what these proposals are. In the first place they are proposals to establish local marine Courts. Now I think there is an almost unanimity of opinion, so far as I can judge, in favour of the principle of these local Courts. It has been thought to be a good thing to bring down the work of the Board of Trade to the localities and have it executed on the spot without expense and without delay. But the propositions of the Board of Trade have been very much

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objected to. Now, in the first place some of the objections appear to me to be altogether unreasonable. Many of the ship-owners have objected to the presence of a Board of Trade official on the Board on the ground that he was in the light of a prosecutor or plaintiff who ought not to be judge in his own Court. (Hear, hear.) Now I do not admit that the Board of Trade is in the nature of a prosecutor. We are not interested as a plaintiff is; we are really a great public department absolutely impartial in this matter and only anxious for the public interest. I object rather to have it put as though we had a hostile interest to you. We are not in antagonism to you, although sometimes there may be differences of opinion between us. But what I particularly want to point out to you is this, that if I were to accept your view, if I were to admit that we are prosecutors, then it follows that you are defendants, and surely if prosecutors may not sit on the Bench neither may defendants, and you destroy the whole of my propositions altogether. (Cheers and "Very good.") I think there has been a good deal of misapprehension as to what is intended, and as to what the results of these Courts will be. They have, I may remind you, two functions to perform which are very different from each other. In the first place under the new arrangements they will have to carry out the inquiries into the cause of loss, and in that position they will be to some extent a judicial authority, but at the same time I have proposed to take away from these courts all powers to punish which are vested in the Wreck Commission and I propose merely to make them a sort of inquest to inquire into the causes of the loss. I think that they would be a very informal body which would deal with the matter much more rapidly than now, without the necessity for all this cumbrous procedure, for professional advice and professional witnesses, and that at the same time, in a great majority of cases, where really the cause of loss is sufficiently well known, such an enquiry would be all that is necessary for the public interest. It was owing to that intention that I desire that this Court should be as informal, as easily called together, and as simple as possible. At the same time, I admit that in respect to these proceedings there is no particular hurry. It does not matter for a day or two, and if you do

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not mind the extra expense which I think would be involved, if you think this tribunal should be made a more important body, and be strengthened, I will be glad to give effect to your wishes, and be disposed to consider favourably the proposal made to me by a majority of the various representative interests concerned, that a shipmaster, as representing that part of the profession, should be added to the Court as a third member in every case. (Hear, hear.) I now come to the second function of this so-called court, and this is a function not judicial at all, and as to which I am particularly anxious you should understand the matter fully. I ask you to remember what happens now? The Board of Trade official is really witness and prosecutor, and, if you please, the judge in the case himself. He goes down to your ship; he thinks it overladen, or that certain repairs or alterations should be made. He requires them to be made, and in the great majority of instances you make them, not perhaps because you agree with them, but in order to save trouble and further expense. (Hear, hear.) You make them and rely upon his sole authority. That is the position now. What do I propose? I propose that no officer should any longer be able to stir a step in the first instance unless he is accompanied by one of yourselves—that there should be with him at every stage a representative of the shipowners with an equal vote. The result would be to give to the shipowners an absolute veto on all the proceedings of the Board of Trade official, unless we thought the matter of such serious importance that we carried it to the Court of Appeal. See how that would work. I assume that you would elect as your representative an honest and honourable man. If our officer thought the ship was overladen he would go to the shipowner, who would be on the spot. There would be no delay in getting the Court together. They would go down to the ship together. He would hear whatever a respectable and an intelligent shipowner had to say on the matter. He would have the opportunity, which he has not now, of knowing whatever reasons such a man might have against such proceedings he thought it wise to take. He would very likely be convinced, but he could not proceed without the authority of the shipowner. The matter in that case would have to go to the

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Board of Trade. I believe it would go to the Board of Trade in a very few cases, for I believe there would be such an understanding as to interests, which are common interests between the representative of the Board of Trade and the representative of the shipowners, that in the vast majority of cases the matter would be settled on the spot. But if it were not settled it would have to go to the Board of Trade. What would be my position, what would be the position of any president sitting in my chair? He would say that unless it is a clear case, in which there was the most evident danger to life, "I will not interfere; I have got a respectable shipowner to say that he believes the ship to be safe, and sooner than risk all the expenses and the probable result of an appeal to a higher Court, I shall accept his decision." (Dissent.) I am very anxious that I should be understood as I go along; therefore, I do not object to any interruption for the purpose of getting explanations. I think a gentleman said that this refers to the load-line. I am only giving the load-line as an illustration, but the course would be the same in every other case in which the Board of Trade stop ships, or every case in which the Board think it necessary to require a shipowner to make alteration in any details. In all such cases before the Board of Trade surveyor can give the order he would have to obtain the assent of the shipowners' representative. Now you will see that the success of the scheme depends entirely upon its being prompt and upon its being simple; and if you were to make a Court, as some shipowners have proposed, it would not be in your interest. It would destroy all the advantages which I anticipate you will receive from such a proposal as I have made. If you have a Court of three or more you will have to lose time in getting the Court together; you will have to have the formal procedure, witnesses, and counsel, and goodness knows what besides. And not only so, but when the decision has to be given it will be a decision always of three members of the Court instead of my officer and your representative seeking to come to an amicable understanding as to the instruction to be carried out. You will have two men representing interests which have been made hostile by your proposal. You will have in every case to go to the arbitrator to decide,

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and everything will depend upon who the arbitrator is. The arbitrator must be somebody entirely impartial, but if you have a man who is entirely impartial he will also be a man probably entirely ignorant of the matter. (A voice, "That is not necessary.") I am afraid it is absolutely necessary. If a man is to be acquainted with all the technical and difficult cases which must arise, he must be connected more or less either with the official element or with the shipping element. In order that you may have a thoroughly impartial man you would have to establish a Court, and to put at the head of the Court somebody in the position of a lawyer. We should perhaps have to appoint marine stipendiaries for this purpose, men who must not be connected with the localities, but who would deal with questions the very A B C of which they knew nothing at all about. I think if you will kindly give further consideration to this matter, if you will take into view the object we have, you will see that our proposals are made distinctly in your interests, that they must work in your interests, and give you power—the power of absolute veto—which you would not have in a Court in which, perhaps, there would be a majority against you. So far as this particular proposal is concerned, it is really the best that could be submitted to you, (Hear, hear.) I come lastly to the question of Marine Commissioners. This also was intended as a boon offered to the shipowners. My belief was—and I gathered it from what had been said to me by some deputations that waited upon me—that what they claimed was a special Court of men, who, by their past experiences, would be qualified to deal with these very difficult matters, and who would sit very much as Railway Commissioners do to deal with all cases submitted to them. In some few cases the Court has been approved of, but I may tell you that in the majority of cases shipowners have come to the conclusion that they do not want any special court, and they prefer to rely upon the Courts of the land. I have no object whatever in complicating the system of our judicature, and as I find that proposal has not been favourably accepted it is my intention to withdraw it. (Cheers.) There was one function of this Court which has been much observed upon; I thought that when we had got such a body, supposing it to be thoroughly impartial and to

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enjoy the confidence of all parties, it would be of great advantage in framing rules and regulations to govern cases of a similar nature which might arise—viz., questions of the load-line, questions of the strengthening of boiler plates, questions of ventilation to cargoes and other matters which come before us from time to time; and I proposed that the regulations should be submitted to them, and that they should hear evidence submitted on both sides, and that they should approve of the regulations or frame others to meet the case. This has been disapproved of by the shipowners, and it falls to the ground with the proposals as to the Marine Commissioners themselves. But what I shall do in future with regard to these matters, so long as I occupy my present position, is whenever there appears to be a number of cases of a similar kind which present difficulties which can be dealt with by rules, I shall endeavour to appoint a committee such as that which I am proposing to appoint with regard to the load-line, which shall be, as far as possible, representative; which shall have the confidence of shipowners as well as of the public, and which shall advise the Board of Trade as to the regulations, if any, which it may with safety propose. Gentlemen, if you ever have to form a committee (laughter), and give satisfaction to all the interests concerned when they are as numerous as they are in the present case, and when every particular class of shipping in every part of the United Kingdom thinks it should have a particular representative, you will be in a position to pity the President of the Board of Trade. (Laughter.) But I have done my best. I have had complaints from all sorts of quarters, but I can say I have endeavoured to secure—first, that all those interests should be represented, as far as possible, on a small committee which could do its work, because a too large committee would not be able to do its work; and, in the second place, I have endeavoured to minimize the official element, and there are only two representatives of the Board of Trade. As regards the particular point put before me by Mr. Stephens, the representation of cargo shipowners, I confess I was under the impression that they were more largely represented than any other interest. ("No, no.") Just let me see; unless I am mistaken, they have got five repre-

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sentatives. They have got Mr. Grey, who is a representative of the cargo shipowners surely; they have got Mr. Laing, who is also a representative of the cargo shipowners; they have got a representative from Lloyd's Registry—and Lloyd's Registry is a representative of the cargo shipowners. ("No, no.") Well, it does not represent that interest alone, but it represents the interest very largely. So does the representative of the Liverpool underwriters. ("No.") Yes, the Liverpool underwriters also, although not to the same extent as Lloyd's Registry; and, gentlemen, we have asked the shipowners of the Clyde to give us a fifth representative to represent cargo shipowners. I only mention this, not to say that the committee is perfect, but in order to assure you that, under very difficult circumstances, I have endeavoured to give satisfaction to all parties. (Cheers.) I think I need not detain you any longer. I hope that in what I have said I have been able to remove some misapprehensions (hear, hear), and to submit new points for your consideration. (Hear, hear.) I think I have shown this, that I am animated by that spirit which I said at the first I was actuated by—a spirit of confidence in the great bulk of the shipowners of this country. (Cheers.) The step I propose to take is this. I shall introduce my Bill at the earliest possible moment of next session. I hope I may get the second reading carried with little difficulty, and without much discussion, because it is my intention to propose to refer the Bill to a Grand Committee, such as gave great satisfaction in regard to the Bankruptcy Bill. Shipowners can then be as largely represented as they like; and I hope they will be largely represented. The whole question can be thrashed out in all its details, with a common desire to arrive at a satisfactory result. (Hear, hear.) And in carrying the Bill to this Committee, let me say I shall do so in no dogmatic spirit whatever. I shall be bound to make my proposals. The principle of the Bill will be a very simple one; and after it has been accepted by all, as I think it will be, I shall be prepared upon the details, to accept without prejudice or the least objection the result of the discussion, which I anticipate will be very full and very long. I thank you very much for the attention with which you have heard me. I really hope, if you will let me say so, as I



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am convinced you will, that in a reasonable and unprejudiced spirit we may do something together to establish the law and the administration of the law upon a better footing, and to reduce the loss of life which we all in common deplore. (Loud cheers.)

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## REMARKS UPON STEAM NAVIGATION BETWEEN TABLE BAY AND NATAL.

AS trade between Great Britain and the South African Colonies has increased so much of late years, and also, as such a large portion of it is carried on by steamers, perhaps a few remarks upon the steam navigation along the coast of South Africa, may prove useful to some navigators who are not acquainted with the pilotage along those shores, more particularly as that admirable work by Captain Algernon de Horsey, R.N., viz. :—"The African Pilot, Part III.," deals more especially with the routes of sailing vessels.

By a knowledge of the coast, the force, direction, and extent of the Mozambique, or, as it is generally termed, L'Agulhas current, and of the probable changes of wind and weather which may be experienced at the various points and capes, much time and (what may be considered of equal, if not greater importance) fuel may be saved. The writer is in every respect averse to what is called "close shaving," but, at the same time, he is of opinion, that in proceeding along the coast of South Africa, the weather being clear, greater safety may be found in keeping well in with the land and out of the full force of the current—excepting off such portions of the coast to be hereafter mentioned—than in getting away from the land, and into the main body of the stream, the velocity of which cannot be at any time, with accuracy, estimated, and may therefore be the means of seriously misleading the navigator.

Having left Table Bay, bound for coast ports to the eastward, in clear weather, after passing Green Point, distant about one mile, it will found as well to steer to pass Duyker Point, about three to four miles distant, as, although there are no outlying dangers here within

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less than a mile from the shore, by doing so a vessel will, after passing Duyker Point come up with Slang Kop, on a perfectly safe bearing when steering to pass that point, from four to five miles distant. The outlying land about Slang Kop, be it borne in mind, is low, and there is foul ground a mile or more seaward of its extreme point.

The navigator may shape a course well to the southward after passing Slang Kop, remembering that Duyker Point kept open of Slang Kop, until the lighthouse on Cape Point—which will have been obscured by Vasco de Gama Peak, from the bearing S.S.E. to ¼ E., magnetic—is again visible, will lead clear of the Albatross Rock.

The Admiralty chart, "Africa, South Coast, Sheet I.," corrected up to 1870, gives an occasional current between Cape Hangklip and Cape L'Agulhas setting E.S.E. at the rate of a mile an hour. The writer ventures to express a doubt as to its existence. There exists, undoubtedly, a current setting in a north-westerly direction, about north-west by west (true) between Cape L'Agulhas and Cape Point which is not noted on the chart, and this current probably has been the partial cause of most of those wrecks which have occurred between Cape Hangklip and Cape L'Agulhas, for, by steering from a position about two miles south-west of the Bellows Rock, to pass five or six miles distant from the Birkenhead Rock which lies off Danger Point, a vessel must meet the current on the starboard-bow, and will therefore be set to the north-eastward of her course.

It has also been found that vessels giving Danger Point and Quoin Point a very wide berth, to pass for instance the Birkenhead Rock twelve miles or more distant, have been set considerably to the south-westward of their course, having met the current on their port-bow. Now, by shaping a course, should the day be drawing to a close, or the night have already set in, from a position a mile and a half to two miles south-west of the Bellows Rock, S.E. by E. ¼ E. (true), say S.E. by S. ½ S. magnetic, a vessel should pass the Birkenhead Rock eight miles, and the reef lying off Quoin Point nine miles distant and *head the current.*

It will be well to remember should daylight or a bright moon



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allow of the land being discerned, that Danger Point is a low-lying spit running out for about four miles from the high land of the Duin Fonteui Berg, and that the Birkenhead Rock lies rather more than a mile off its extreme point.

The appearance of the land, even under the most favourable circumstances, is apt to prove deceptive when the distance off is being estimated, and this may be said to be the case with all low lying points of land which have mountainous ridges immediately at their back.

It applies also, therefore, to Quoin Point especially, and it will be found prudent before hauling in to make the lighthouse, or light, as the case may be, to get the Gunner's Quoin well abaft the beam. The Gunner's Quoin is a mountain ridge, wedge-shaped, as its name denotes, and will be easily recognized.

The current will be found strongest during the summer months, as in winter the volume of the warm Mozambique stream evades the cold water of the L'Agulhas Bank, and but an insignificant portion of the stream mingles with its waters and flows over it, whereas during the summer months the water on the Bank having become heated with the rays of the sun, the L'Agulhas current mingles freely with it, and may have considerable value, even within a short distance of the shore.

From Cape Corrientes to Cape Point the temperature of the surface water will be found a most useful guide to those who make careful note of its variations in judging, roughly though it may be, the direction and velocity of the current, for an increase in the velocity of the Mozambique stream is, in all cases, attended with an increase in the temperature of the water; and this feature should be borne in mind in the navigation of these waters, as it applies to all of that portion of the coast to which the L'Agulhas Bank lies adjacent, and still further north-eastward when it becomes considerably more marked.

It will be seen by referring to the chart that the Bellows Rock and Cape Point lighthouse bear north (true) when in one bearing, and may be made of use for ascertaining the error of the compass when passing, and thus shaping a course to the south-eastward; but the navigator is recommended not to place too much reliance

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on any observations for compass error taken between Table Bay and Cape Point close in with the land, for there is every reason to believe that the land between these two positions exercises an influence over the needle.

The writer has found that compass errors observed there do not correspond with those taken on the same points of the compass when the vessel's position lies between Cape Point and Cape L'Agulhas; that by observations made on the south-east points, between the two former positions, there will be a smaller compass error than will be found by observations taken between the latter two positions on the same point, *i.e.*, a course shaped to the south-eastward when a vessel is close off Cape Point will have a more easterly or shoreward direction when that Cape is well astern.

The existence of this local attraction when ascertaining the error and shaping the course, may have been another cause of vessels having been found to the north-eastward of their supposed position, when standing to the south-eastward. Should the weather be thick, a vessel may round Cape L'Agulhas at a distance of about five miles in perfect safety, by keeping the deep sea lead going at least every half-hour, and standing out to the south-eastward again at once, should the water begin to shoal after the course has been altered to pass L'Agulhas. The soundings off this cape, as shown by the Admiralty chart, are most reliable.

The so-called south-easter which blows with such violence into Table Bay, rarely extends to the eastward of Cape L'Agulhas, and must not be confounded with the south-easter which is experienced betwen that cape and the Bashee River. The former is an extension of the south-east trade-wind, which extension is caused, probably, by the existence of an anti-cyclone or area of high atmospheric pressure, lying to the south-westward; its direction seaward is about south, but the high land in the vicinity of Cape Point, Table Mountain, and the Devil's Berg, acts as a shield, and it is deflected, blowing south-east round the Berg, into Table Bay. It is a clear dry wind, and while it blows, atmospheric pressure remains steady, or, if anything, increases. The latter is a damp, hot wind, caused by the advance of a system of low atmospheric pressure, travelling to the eastward, in the van of which it blows.

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Hitherto the navigator will have experienced little or no difficulty in distinguishing the various points of land, capes, &c.; but, between Cape L'Agulhas and Cape St. Blaize the description of a few conspicuous and noteworthy landmarks may prove useful in case the weather shows signs of becoming thick, or the day be drawing to a close, and a good "fix" by cross-bearings be rendered desirable.

Capes Infanta and Barracouta may be easily distinguished from an extreme easterly or extreme westerly position, but, when viewed at a large angle with that of the coast line, cannot be made use of for accurate bearings, as, in consequence of the fore-shortening of the promontories and the sameness of the colouring of the land, it is seldom possible to ascertain which are their extreme points.

Now, eight miles to the eastward of Cape Barracouta, is situated the Kaffir Kuyl, and on the north shore of this bay, is a most conspicuous sand-patch which is not marked on the charts.

The sand-patch may be distinguished from the two sand-patches which lie to the north-eastward of Cape Barracouta, by the short dark-coloured projection which juts out in a southerly direction and is called Morris Point. There is a very large, bare, sandy-looking acre or so of land overlooking Bull Point, and generally a heavy break on the beach at its base. Cape Vacca is a low leaden-coloured point. The water between Cape Vacca and Bull Point is always more or less discoloured by the outflow from the Gouritz River. Flesh Point is a good landmark; it is a small rocky point of a pinkish hue and appears like a cape in miniature.

A course should be shaped in clear weather from the vessel's position within seven miles south of Cape L'Agulhas to a position three miles off Bull Point. The current between Cape L'Agulhas and Cape St. Blaize, is, as a rule, inappreciable. The soundings of the latter cape, and between it and Izervark as given on the charts, have been found by the writer to be most reliable. Four miles to the westward of Cape St. Blaize, the land is rocky to the water's edge, but to the westward of this, the character of the coast changes, so that no difficulty need be experienced in recognising Pinnacle Point which is the extreme outlying rock to the westward. When standing in for Mossel Bay, if this (Pinnacle)

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rock be kept well open of all that rocky portion of the land which lies to the eastward of it until Sea Island is open of Cape St. Blaize, a vessel will pass well clear of the Blinder Rock. Seal Island is the only island in Mossel Bay, and may be easily picked up with the aid of the glasses. The best anchorage in this bay when the weather is fine and the water smooth, will be found in 5½ fathoms of water; having the narrow white road immediately to the northward of the jetty quite open.

The water shoals very rapidly towards the western shore, or town side of the bay, but there is plenty of water to the eastward. During and after south-westerly gales a very heavy swell sets into the bay, causing vessels at anchor to roll violently, and the sea breaks in as much as six fathoms occasionally; this is also the case when a south-easter is blowing, and vessels in both cases, will be found to ride easier with plenty of cable out, in from seven to eight fathoms of water.

Between Cape St. Blaize and Cape St. Francis, there appears to be a strong set in towards the shore; but, as an adverse current is also experienced by vessels proceeding eastward between these two capes, and whereas a favourable current is found to flow when proceeding westward with no set in towards the shore, but on the contrary, occasionally a set out, the assumption therefore is, that the direction of the current is about N.W. by W. magnetic, or parallel with the general contour of the coast line, and that it catches the eastward-going vessel on the starboard-bow, and thus shoulders her in towards the land. It may therefore be considered prudent to shape a course when leaving Mossel Bay for the eastward to a position about ten miles seaward of Cape St. Francis lighthouse, unless a daylight passage is being made and the weather be clear. The weather is frequently thick and rainy between Cape Seal and Cape St. Francis, for the mountainous country in the vicinity of this portion of the coast acts as a condenser; the forenoons are generally clear, but the sky becomes cloudy and the atmosphere misty as the day advances, after which rain may be expected. This applies to all seasons of the year, but considerably more rain falls during winter months than in summer.

During, and after south-west gales, a very heavy sea, or swell,

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is experienced off the South African Coast; and vessels proceeding between Mossel Bay and Cape St. Francis catch this sea or swell on the beam; in which case allowance should be made for it, as well as for current, when setting the course, for on a dark night, the weather being not very clear, it is possible to get dangerously near to the reef off Klippen Point without seeing either St. Francis light or the land, although the light is a good one.

By passing six miles to the southward of Cape St. Francis light and shaping a course to pass the Thunderbolt Reef two miles distant, a vessel will meet the current (which, during the summer months runs at the rate of a knot or more an hour) stem on, and should it be night time, make Cape Recife light at its greatest limit, the weather being clear. On any bearing to the northward of East, the light is obscured, so that should a vessel pass close to Cape St. Francis, she will have to be kept well over, traverse a greater distance and thus waste time and fuel, in order to make Recife light at its full range. Having rounded Cape Recife at least two miles distant, a course N. by E., magnetic, should take a vessel clear of the Roman Rock; however, if the beacon to the northward of the lighthouse be kept open of the lighthouse until the two Roman Rock beacons are in one bearing, a vessel will go well clear; should it be night time, by keeping in the white ray of Recife light, until the town light is observed (when first seen it should show red) a vessel would pass clear of the danger, and might stand in for the anchorage, but, as an additional precaution, and, also, in order when standing in, to give Strut's Reef a wide berth, a vessel should not be hauled in more than a point until she is in the white ray of the town light.

The best anchorage for steamers at Port Elizabeth is in six fathoms, having Jetty Street and White's Road well open. White's Road is that broad, deep cutting immediately to the southward of the lighthouse and Donkin Monument. The following cautions must not be omitted. In regard to the town light care should be taken when coming from the eastward that some of the many brilliant gaslights on the hill be not mistaken for it, as they easily may: coming from the westward it should be remembered that the light should show red when first

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observed. After sunset, and before sunrise, the mist which often hangs about the hill dims, and occasionally altogether obscures the light.

Between the bearings west and W. by S. about (the writer cannot recollect the exact bearing), it is obscured at a distance of from seven to eight miles, from some fault, probably, in the construction of the lens. During the winter months, south-easters are of the rarest occurrence. The fact that steamers lie at single anchor off this port with often as much as 80 fathoms of cable out and are never moored, as are the sailing vessels, should be borne in mind when selecting a berth, lest a vessel having brought up when the wind was from the westward and off shore should be found to have given a foul berth when the wind comes in from the south-east.

When leaving Port Elizabeth in the day-time for the eastward, with the prospect of clear weather and from four to five hours of daylight, the Bird Island passage will be found the most satisfactory for a steamer, as by taking this route, a favourable, instead of an adverse current, will be experienced to Cape Padrone, and, indeed, occasionally as far as the River Kowie, within three miles of the shore. A course should be shaped for Woody Cape, which may be distinguished by its somewhat miniature cliffs, which form a contrast to the shelving beach on each side of it. Cape Padrone is a low, sandy point, and, in bad weather, the water may be seen to break a mile and a-half or more outside of it; it breaks also at a considerable distance off the beach at the base of Nanque's Peak. Nanque's Peak is a cone-shaped hill which cannot be mistaken for any other about here. There is now a beacon on Glendower Peak as a mark for the Kowie. Steamers bound for the Kowie should keep at least two miles off the land until the harbour lighthouse bears about north, magnetic, and should then stand in towards the lighthouse.

The best anchorage is in twelve fathoms, sand, the lighthouse bearing from N.N.W. and N. by E., magnetic. A berth to the eastward of this would place a vessel too close to the Fountain Rocks, should the wind be from the westward, fresh. Care should be taken to drop the anchor in sand, as it should be

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borne in mind that the water shoals very rapidly, and that the vessel should therefore be stopped in plenty of time to allow of a good up and down cast being obtained. The rocks called "The Three Sisters" are conspicuous, particularly on a N.N.W. magnetic bearing; and Great Fish Point may be distinguishable on a clear night at a distance of from four to five miles by the mass of white sand of which it is composed. If the navigator be making the passage between Port Elizabeth and East London direct, during the night, great advantage may be derived by making the Kowie light, and ascertaining the vessel's position by two bearings of it. Riet Point should be given a comparatively wide berth, for there is some reason to believe, that the reef which runs out from it extends seaward rather more than the chart denotes, and even should this not be the case, the Point is so low, that it is extremely difficult to estimate the distance off it. Comparatively little current will be experienced within two miles of the shore between Great Fish Point and Hood Point; but outside of two miles it increases considerably and five miles off shore runs to the westward at an average rate of about two knots an hour. The Kieskamma River—which has a wide mouth and looks something like a river—and the Cove Rock are marks which in daylight are unmistakable, but are not distinguishable two miles from the shore at night, unless there be a brilliant moon and clear weather; but, about eight miles to the westward of East London Roads, at one mouth of the Gola River, is a deep ravine, which can generally be discerned on a dark, if clear night, at a considerable distance. From a position two miles seaward of the Gola River, East London light is obscured, being shut in by the land about Hood Point: from this position a vessel should be kept out in order to give Hood Point a wide berth, for, judging by the breakers which may be seen off that point during bad weather, foul ground must extend quite as far out as the charts denote. The best anchorage for a steamer in East London Roads is well to the eastward, in from ten to eleven fathoms of water, Cove Rock being shut in by Hood Point. In this berth a vessel lies out of the influence of the current, which, in a more south-westerly position, where it often runs with considerable velocity, would swing her

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beam on to the southerly swell which generally rolls into this open roadstead.

Steamers should always lie under banked fires and at single anchor off this port, and during high winds the engines should be kept ready for moving at a few minutes' notice. It is also advisable to have the cable in readiness to slip, in order, if necessary, to avoid the danger of being fouled by any vessel which may have parted, or may be dragging her anchor. This is by no means an uncommon occurrence in East London Roads. The strong easterly winds, which are usually of short duration, are succeeded by westerly winds which commence from about north-west to west north-west. With the wind in this direction, although off the land, the vessels lie under only partial shelter from the sea, for, as the wind increases, a heavy swell rolls into the roadstead from about west south-west, causing them to lie very uneasily. The most dangerous wind here, is the south-west gale which blows hardest, while the barometer oscillates between 30 inches and 30·10, and is accompanied by a thick drizzling rain. A very heavy sea gets up, and the master of a steamer would do well to weigh while he can "get his anchor" and put to sea, when one of these gales commences; but should he elect to remain, he should on no account attempt to relieve the strain on the cable by moving the engines. That method may, or may not be advisable elsewhere, but it will not answer in East London Roads. It is the unequal strain upon the cable resulting from a windward running current acting upon a vessel in an uneven seaway that so frequently is the cause of vessels parting; this inequality of strain and consequent jerk upon the cable will be aggravated by the use of the engines. Between Kahoon Point and the Bashee River the current is very little felt within three miles of the beach, and, except in very thick weather, no danger need be incurred by keeping a vessel about a mile and a half off the shore. From the Bashee River to Waterfall Bluff, nothing is to be gained by keeping close in with the land in smooth weather, for a much greater distance has to be traversed by so doing.

To head the current, which is strong between these two positions, a course should be shaped from two miles seaward of the

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former to pass the latter (Waterfall Bluff) about five miles distant; but in daylight and clear weather, or even on a clear night, a better result will be obtained by shaping a course for Waterfall Bluff. The vessel will be set in, but can be hauled out when necessary.

Between Kahoon Point and the Bashee River are several good land marks; notably, Cape Morgan, which is a somewhat flat-topped, square, bold-looking cape, having the Kie River on its eastern side off the mouth of which lie the Snag Rocks, visible at high water. Also on the northern shore of Mazeppa Bay there is a most conspicuous triangular-shaped sand patch, which can be easily picked up, and, with Sandy Point, the only sandy promontory hereabouts, may be recognised at a great distance. The Bashee River may be distinguished when abeam by the higher land on either bank, which densely wooded, slopes towards its bed; also by the straightness of its course at the entrance, which admits a view of remarkable beauty up the ravine. Between this and Natal Bluff are Hole in the Wall, St. John's Gates, Waterfall Bluff, North and South Sand Bluffs, Red Hill, and Red Topped Hill; they are so accurately described in the "African Pilot," that further delineation would be superfluous. At the mouth of the Umzimklava, which lies between St. John's and Waterfall Bluff, is a deep wedge-shaped ravine, which is almost as remarkable as the Gates.

There is a small settlement called Port Shepstone, at the mouth of the river Umzimkulu, and on its western bank near the beach, a flagstaff. There are several white houses on the high land about the mouths of the rivers Umzinto and Umzimayo. Three-quarters of a mile to the westward of the mouth of the Umzimayo, there is a reef which appears to extend seaward from the shore for nearly half-a-mile; about one mile to the eastward of this reef may be seen, close to the beach, a thatched house embowered amongst trees or shrubs, and this house will be found a useful mark when approaching the Aliwall Shoal.

A vessel making the passage inside of the Aliwall should be within three miles of the beach when abreast of this house, and should pass Green Point about a mile distant, and may still, with advantage, keep close to the shore until the River Umkomas is well open, when a course should be shaped for

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Natal Bluff. Between Green Point and the Bluff there is a set to the north-east close to the shore. On the higher land overlooking Green Point is a beacon consisting of a flagstaff and triangle, but it is not visible more than four or five miles distant under ordinary atmospheric conditions. Between Waterfall Bluff and Natal Bluff, a vessel may, with safety, be kept about a mile and a-half off the beach, when the current will be found to be weak and the water smoother. The best anchorage for a steamer in Natal Roads is in from eight to nine fathoms, having the flagstaff and lighthouse on the Bluff in one bearing, but nearly open, and West Street well open. This street extends from the beach through Durban to the Berea, and its opening on the beach is marked by a white flagstaff and triangle. Two fairly good green lights are exhibited vertically at night on this flagstaff near which is the rocket-house. Vessels ride best at single anchor in Natal Roads, with plenty of cable out during the strong easterly winds which may be expected at all seasons of the year. If anchored so far to the northward as to shut in West Street, a vessel will be found to lie uneasily during the ebb tide in the trough of the southerly swell, which almost invariably rolls into this roadstead. The holding ground in Natal Roads is good, and the anchorage is now much clearer of old anchors and chains than it was two years ago, when hooking a cable was a common occurrence.

During strong easterly winds, a heavy sea rolls into the roadstead, but in the berth recommended, a vessel will be found to ride easily with plenty of cable, say 90 fathoms out, and, owing to the undertow, without much strain on it. It will be prudent, nevertheless, under these conditions, *i.e.*, during strong easterly winds, to have steam up in order that the vessel may be under command in the event of some sailing vessel which may be dragging, or has parted, threatening collision. Were some well-defined area of the outer anchorage assigned by the Natal Harbour Board for the accommodation of steamers only, the advantage to them thus derived of exemption from the danger of being fouled by some vessel not under control, is incalculable.

When leaving Natal bound for coast ports to the westward, a course should be shaped from the Bluff to pass Green Point, from

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five to six miles distant, and advantage taken from thence of the favourable current, by giving the land a wide berth; but, although an additional knot or two of current per hour may be gained by this means, it cannot at all times be recommended, as in rough weather, better results may be attained by keeping in the smoother water within four miles of the beach.

If an easterly wind should be blowing, the barometer will be found to fall very rapidly, as the vessel progresses to the south-westward, for she will be advancing towards a system of low atmospheric pressure, which system will be travelling to the eastward, and, should the vessel pass through or near the centre of this depression, the change of wind to the westward would be very sudden. This frequently happens, and the numerous cases of disabling of sailing vessels on the south African coast is the result. The current will be found strongest between Waterfall Bluff and the Bashee River, where, also, the heaviest seas are experienced; should a westerly gale be blowing the navigator is recommended to keep close to the land, in comparatively smooth water, while the weather is clear. Vessels have frequently run past East London when bound for that port from Natal by undervaluing the strength of the current, when far off the land. The dead reckoning cannot in the least be relied on, so that, should full advantage have been taken of the stream by giving the land a wide berth, the navigator would do well to stand in towards the land some hours before he expects to make East London, and thus ascertain his position; for, at a distance of ten miles, it is often impossible and always difficult to distinguish the various landmarks; moreover, in the mornings, and sometimes in the evenings, there is usually a haze over the lower land about the shore, although the high land at the back may be remarkably clear. As this peculiarity exists not on this portion of the coast only, but along the South-African shores generally, the writer takes the opportunity of cautioning the stranger that, when making the land, the effect of the phenomena described is to convey to the observer the belief that the coast is a long way distant when it may, in reality, be under three miles. Between East London and Algoa Bay, a distance of from four to five miles can be recom-

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mended in clear weather as far as the Kowie abeam, and thence, at night, a course shaped to pass Bird Island about seven miles distant may be held, until the light is observed. By keeping far out, when bound for Port Elizabeth, vessels have occasionally experienced so strong a current that they have been found considerably out of their supposed position when the land was observed. A steamer not long ago went ashore on the reef off Cape Recife although Bird Island light had been sighted, and a course shaped for Port Elizabeth town light. When shaping the course from the vessel's position off Bird Island for Port Elizabeth, the writer has been in the habit of giving an additional half point of northing, and has, almost invariably, made the anchorage ahead.

Should a westerly gale be blowing, the water will soon be found to smoothen by standing well into the bight of the bay, after passing Bird Island.

Approaching Cape St. Francis from the eastward a vessel will be set to the northward after south-westerly gales. If bound for Mossel Bay and it is night-time, it will be found advantageous to pass St. Francis lighthouse six miles distant, as a course shaped from that position to Cape St. Blaize, should take a vessel seven miles clear of Cape Seal, and give her the benefit of a favourable current.

If bound for Table Bay direct, a course should be shaped from St. Francis, distant about three miles, to a position ten miles south of Cape L'Agulhas Lighthouse. The current which is said to set into Struy's Bay, after south-east gales, is not felt by vessels steaming between Cape St. Blaize and Cape L'Agulhas. At night a steamer should pass about five miles south of L'Agulhas, and steer west, (true), until well past Quoin Reef, when, the weather being clear, a course may be shaped for the Bellows.

Having given the land about Quoin Point a wide berth, a set off shore will be experienced by a vessel standing toward Cape Point.

Having passed the Bellows in daylight, distant a mile or two, the navigator should steer N.N.W., magnetic, until Duyker Point is open of Slang Kop, when the vessel will be clear of the Albatross Rock; the course should then be altered to north, magnetic, until

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Cape Point lighthouse is obscured by Vasca de Gama Peak, when she may be again hauled in. At night a much wider berth should be given to the land.

The writer has found the soundings on the L'Agulhas Bank along the shore, as given by the Admiralty charts, wonderfully accurate, and would urge a constant use of the deep-sea lead, when the weather is not clear; also, as before mentioned, for ascertaining the temperature of the surface water, and thus roughly estimating the velocity of the Mozambique current, the thermometer will be found a most faithful friend.

CAMPBELL MELVILLE HEPWORTH.

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## CORRESPONDENCE.

### LOSS OF LIFE AT SEA.

*To the Editor of the "Nautical Magazine."*

Sir,—Mr. Chamberlain is quite right in saying that insurance has a great deal to do with loss of life at sea, but I think it will be very difficult to alter it; if people cannot insure in England, they will do so abroad. More ships are lost through bad hatchways than many people are aware of. In cargo steamers they are now made so very large, and so very much weaker than the surrounding deck, that a heavy sea breaking on them is almost certain to stave them in, then with high bulwarks the whole of the water on deck rushes into the hold. The "fore-and-afters" under the hatches never have a sufficient hold, generally a slight bit of boiler-plate rivetted to the coamings, giving about two inches hold to the "fore-and-after," which gradually bears. In spar-decked ships the coamings round the stokehold gratings are frequently much too low. There is no reason why they should not be six feet high. When they are low they have frequently to be covered with canvass, which soon rots from the heat and gives way; it also increases the heat in the stokehold.

Sea-anchors should be carried by all steamers so as to be able to heave-to in heavy gales, even in a break-down in moderate weather

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they wou'd be very useful in keeping a ship quiet, and preventing her drift. They are largely used in American steamers, and I have been informed that they are compulsory in passenger ships. Many letters have been written to the *Nautical Magazine* about stopping large steamers in heavy gales, and their taking up a natural position with the sea on the quarter; still, I do not think anybody will dispute the fact that they would be better with the sea on the bow. Shipmasters have generally nothing to do with the loading of their ships; that is done by clerks from the office. Some few years ago a passenger steamer capsized in the Pacific, sent to sea by the agent, although the captain represented the unsafe condition of his ship. I believe he had the choice of going to sea or losing his berth; of course nothing could be done to the agent. Competition is so keen that ship's expenses are cut down to the lowest possible figure. Consequently, ships are undermanned, and officers with watch and watch have too little sleep, hence a bad look-out. I think an inquiry into the number of men carried in most steamers, and what they have to do, even without anyone on the sick list, which is not often, as I find that five per cent. is the average, would astonish most people. The men are getting worse year after year. If a man is sober, steady, and a good seaman, he can get employment in docks at from a pound to thirty shillings a week, and have fair food, which he cannot get at sea. The food and cooking for the crew at sea is worse than in gaol by a long way, and no labourers on shore would stand it. If anyone doubts this let him try it on his own servants or labourers for two months, giving them the usual scale and getting a ship's cook to cook for them. I feel certain that better food would do much to improve our seamen. The inferior food causes the craving for drink noticeable in our seamen. Most steamers have only one engineer and just enough firemen to keep steam, on watch. The engineer is supposed to visit the boiler-room and go the whole length of the tunnel every half-hour to examine the bearings. Should the officer of the watch want to stop or slow the engines, the engineer would not be able to get to his starting gear for at least five minutes. What would be said if an engine-driver on a railway had to go the whole length of his train to



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see that his couplings, &c., were all in good order. It is very difficult to get any improvement in ships, as the nautical manager is, in most cases, valued for his ability in cutting down expenses.

Passenger steamers should be distinct from cargo steamers and built unsinkable from collision, see my letter in the *Nautical Magazine*, of October 14th, 1881, page 941. I think the great number of passenger ships that have been sunk from collision in the last few years will prove that I am correct. If this was done the Government would find that they had a large fleet of fast cruisers and transports at their command in case of war to carry our troops and protect our commerce. There are not many men-of-war that can carry coals enough to maintain a high rate of speed for any length of time, and I doubt if there is one that could catch a powerful merchant steamer going head to wind. If there is such a one, I have never come across her.—I am, Sir, your obedient servant,

SHELL-BACK.

December 31, 1883.

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## THE PORT OF ANTWERP.—A USELESS OBSTRUCTION.

*To the Editor of the "Nautical Magazine."*

Dear Sir,—Last November two steamers collided with the same jetty in one of the docks. No. 1 steamer received a claim for £16 for repair of damage on the 23rd, which was settled for £12. On the afternoon of the 23rd there were some men at work taking the top planks off the jetty, and they had a spar there ready to replace the broken one; No. 1 steamer went away next day. On the 26th, No. 2 steamer collided with the same jetty, and had a claim for £17, which was settled for £14, and when the master went to examine the damage he found the jetty with the planks taken up and the new spar floating in the water much in the same condition that No. 1 had seen them. The 23rd was Friday, and it was raining all day on Saturday and Sunday, so that the men could not work at it, and No. 2 steamer collided with it on Monday forenoon. It looks as if these two steamers had to pay for the same damage. There was an old break in the spar when it was surveyed by the master of the first of these two steamers, and there was a rumour that an English

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steamer had had to pay for it a few days previous. The thing is only a trap for ships where it is, and we are at a loss to find what it is for, unless the Corporation have found that ti is paying them a very good interest on the capital laid out; but we think it would be more honourable for them to have a more legitimate investment than to fleece the steamers visiting their port and getting the officers in charge into trouble.—We are, dear Sir, yours truly,

TWO SHIPMASTERS.

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## SOUND-SIGNALS AT SEA.

We have received a letter from our valued correspondent, Mr. P. J. Hammond, Inspector in the Insurance Company of North America, and for 38 years engaged in the Atlantic trade, who asks us to publish the following suggestions for preventing collisions, which he tells us have been dictated by a long experience:—

I. That all classes of vessels at anchor, steam or sail, shall use the ordinary ship's bell, and that only.

II. That all *sailing* vessels under way shall use a bugle.

1. To be sounded once every minute when on the port-tack.
2. To be sounded twice every minute when on the starboard-tack.
3. To be sounded three times every minute, when the vessel is going free or running.
4. To be sounded four times every minute, to signal "I am sinking," or "stay by me," &c.

III. That all steamers under way shall use the whistle, and that only.

1. Two short blasts every minute going east.
2. Two long blasts every minute going west.
3. One short blast every minute going north.
4. One long blast every minute going south.
5. Four successive blasts to signify "I am sinking," or "want assistance," &c.

Mr. Hammond claims for them—

First: Simplicity.



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Second: That they call for the use of an instrument for sailing vessels, which can be heard at least two miles farther off than the whistle of a steamer, and at a still greater distance than the *horn* at present used by sailing vessels, which frequently is not heard until a steamer is so close that a collision is inevitable.

Third: That if the bugle were adopted, there could be a legal requirement regulating the size and tone, &c., and the instrument could be made after the regular army pattern, most people being able to testify to the great distance at which these can be heard, frequently in still weather as far as five miles.

[We insert the above at the request of our correspondent; but we think it right to inform him that the Board of Trade have sent all proposals for compass course signals to the Society of Arts, by whom the subject is being investigated.—Ed. *N. M.*]

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## BOOKS RECEIVED.

We have seen an advance copy of a book just finished by **Mr.** Murton, the Solicitor to the Board of Trade, dedicated, by permission, to Mr. Chamberlain. It treats exhaustively and clearly of the law and practice relating to inquiries into shipping casualties and into incompetency of masters and officers at home and abroad; and is altogether the best book on the subject yet published. The type and paper, and the printing, are of the best, the arrangement is excellent, and the index is so complete and so well put together that the reader can at once find information he may seek on any point. It is an important volume in itself, and will form an invaluable addition to the books which must be found in the office of every Shipowner of importance, and of every Solicitor or Counsel who may desire to become fully acquainted with the law and practice of the Courts of which it treats. It is published by Stevens & Sons, 119, Chancery Lane; and Pewtress & Co., 28, Little Queen Street, Lincoln's Inn Fields, W.C.

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*The Young Shipmaster*, by Captain Joseph Leeman, L.R.N.R., F.R.A.S., and Examiner of Masters and Mates under the Board of Trade, Aberdeen, is a work intended to furnish information necessary to be known by a shipmaster in addition to what is required of officers merely. It is presumed that before attaining the highest rank in his profession the officer has learnt all that is necessary as regards the navigation of his ship, and Captain Leeman has set before himself the task of explaining the responsibilities of the shipmaster as regards his crew, owner, and charterers, as well as his duties in respect of the stowage and condition of his ship. Very much good and useful advice is given in a chatty genial style. Very much of it we are sure is needed, perhaps some of the things mentioned which are most obvious are among the most neglected. It is easy to complain of the modern Merchant Seaman, and we may say that Captain Leeman quite agrees with the current complaints on the subject, but is not this little piece of advice much needed :—"You should also see that your men's quarters are in a fit state to receive them. I have occasionally seen the topgallant forecastle, where the crew were to be berthed, so full of rope, blocks, tar casks, oil cans, brooms, buckets, and sundries of all kinds, that the men had not a place to put a bag or bundle in, even the sleeping berths being full of lumber of one kind or another. A little forethought will prevent all this, and things will certainly start all the better if the men have room to place their chests and berths for their bedding. They should have no temptation to grumble and swear at the want of everything." Advice is given as to the shipmaster's duty in foreign ports and the carriage of emigrants and coolies; and on the whole we may say that the author has succeeded in putting together much valuable information for an officer on his first command.

## Our Library Table.

Navigators who refer to our Nautical Notices will find ample employment for any spare time unoccupied by their professional business, as the *Notices to Mariners* and *Hydrographic Notices*, British and Foreign, do not seem to diminish; it may indeed be said that the Hydrographic Offices of all the Maritime nations are

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much more on the alert than ever they were before; that of the United States is especially to the fore in the production of works useful to commerce and navigation, and the Hydrographer proposes to issue monthly or at short intervals, a wind and current chart, which will show the probable limits of the Gulf Stream, drift ice, bergs, the best tracks for steamers, reported rocks, shoals, derelicts, storm tracks, &c. Of this pilot chart of the North Atlantic, the Hydrographer at Washington says:—

"With the increase of commerce, the large number of fast steamers crossing the ocean, and the facilities afforded by the submarine cable, a vast amount of valuable information can be collected weekly. With the methods that have been in use hitherto, the information obtained must lie idle for months, if not for years. A weekly edition of Maury's chart would show, in addition to the information hitherto presented, the track of recent storms, and the probable weather at sea for the coming week. It would also be made invaluable to the mariner by showing in a graphic form the probable limits of the Gulf Stream, drift ice, bergs, the best track for steamers, reported rocks, shoals, and other marine dangers, the establishment of new lights, and changes in the positions of buoys. The necessary information can be collected by the newly-established branch offices from the captains of ocean steamers and ships of war, and from the masters of merchant vessels generally, without cost to the Government."

The books, pamphlets, and papers on our table are as follow:—

Van Nostrand's *Engineering Magazine* (New York), begins the year with a strong budget of papers, theoretical and practical, of the greatest interest and importance to the class of readers who support it. The *Scientific American* (New York), abounds with useful knowledge of every kind, partly contributed and partly selected; not the least remarkable column in it is the "index of inventions" for which letters patent of the United States are granted week by week. The *Revue Maritime et Coloniale* (Paris), in the January number, enters on its 80th volume, and has improved year by year; a paper on cyclones, and another on the discovery of the wreck of Lapérouse's unfortunate voyage, are the most important to the general reader. *Annales Hydrographiques*,

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(Paris), 2° semestre, 1883, is published by the Dépôt des Cartes et Plans de la Marine; the selection of documents and memoirs relating to hydrography and navigation contained in this part is of great value, and we may mention the cruise of the *Talisman*, a sequel to the scientific mission of the *Travailleur* in exploring the Bay of Biscay and parts of the North Atlantic, and also the account of the West India hurricane at the end of August, 1883. *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft. XII., closing the past year, gives, in addition to the usual notices and sailing directions, a chart showing the tracks taken by the *Moltke*, *Elisabeth*, and *Carola* — ships of the German Navy, which cruised round the world during 1881, 1882, and 1883, chiefly for scientific and exploring purposes. *Rivista General de Marina* (Madrid), for November and December. The number for November, among other articles, contains a description, with illustrations, of a torpedo-boat recently built in Germany, and a paper on the improvement works in the harbour of Bilbao; that for December has a paper on new vessels of the Spanish Navy, and one on proposals for the construction of cruisers. *Rivista Marittima* (Rome), for December, contains, in addition to the serial papers we have formerly noticed, an article on the mobilisation of the naval forces, and one by Professor Carlo Resio on the "Dinamografo," an instrument for registering the work of machinery.

We have also to hand the latest numbers of *Hansa*, *Das Schiff*, *Le Yacht*, *L'Avenir Militaire*, *Forest and Stream* (U.S.), the *New York Maritime Register*, *Nautical Gazette* (U.S.), and that pushing paper of the west coast of the United States, the *San Pedro Shipping Gazette*.

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# TIDE TABLES FOR FEBRUARY, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | LONDON BRIDGE. | | HULL. | | NORTH SHIELDS | | LEITH. | | DEVONPORT. | | DOVER. | | WESTON-SUPER-MARE. | | LIVERPOOL. | | GREENOCK. | | QUEENSTOWN | | KINGSTOWN. | | LONDONDERRY. | | BREST. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| F | 1 | 4 33 | 4 53 | 9 4 | 9 2 | 6 0 | 6 21 | 4 54 | 5 15 | 8 14 | 8 34 | 1 39 | 2 0 | 9 27 | 9 46 | 1 37 | 1 57 | 2 26 | 2 46 | 7 38 | 7 58 | 1 27 | 1 49 | 10 20 | 10 50 | 6 20 | 6 40 |
| S | 2 | 5 13 | 5 33 | 9 46 | 10 7 | 6 42 | 7 4 | 5 37 | 6 0 | 8 54 | 9 15 | 2 21 | 2 43 | 10 4 | 10 23 | 2 17 | 2 37 | 3 6 | 3 26 | 8 19 | 8 40 | 2 11 | 2 33 | 11 12 | 11 38 | 7 1 | 7 24 |
| S | 3 | 5 53 | 6 16 | 10 30 | 10 56 | 7 27 | 7 52 | 6 24 | 6 49 | 9 37 | 10 0 | 3 6 | 3 29 | 10 41 | 11 1 | 2 59 | 3 22 | 3 48 | 4 11 | 9 2 | 9 25 | 2 56 | 3 21 | — | 0 8 | 7 48 | 8 13 |
| M | 4 | 6 38 | 7 5 | 11 28 | 11 55 | 8 20 | 8 52 | 7 16 | 7 47 | 10 25 | 10 53 | 3 58 | 4 18 | 11 24 | 11 51 | 3 47 | 4 14 | 4 35 | 5 1 | 9 49 | 10 16 | 3 48 | 4 18 | 0 43 | 1 21 | 8 40 | 9 10 |
| Tu | 5 | 7 33 | 8 5 | — | 0 31 | 9 28 | 10 8 | 8 22 | 9 0 | 11 24 | 11 59 | 4 45 | 5 15 | — | 0 25 | 4 46 | 5 24 | 5 31 | 6 5 | 10 49 | 11 30 | 4 52 | 5 29 | 2 1 | 2 44 | 9 45 | 10 26 |
| W | 6 | 8 40 | 9 21 | 1 9 | 1 47 | 10 50 | 11 32 | 9 40 | 10 23 | — | 0 39 | 5 49 | 6 27 | 1 4 | 1 46 | 6 9 | 6 55 | 6 44 | 7 26 | — | 0 12 | 6 8 | 6 47 | 3 25 | 4 3 | 11 11 | 11 57 |
| Th | 7 | 10 6 | 10 50 | 2 26 | 3 5 | — | 0 12 | 11 4 | 11 42 | 1 21 | 2 3 | 7 9 | 7 52 | 2 30 | 3 14 | 7 39 | 8 19 | 8 9 | 8 50 | 0 55 | 1 38 | 7 26 | 8 4 | 4 39 | 5 11 | — | 0 29 |
| F | 8 | 11 30 | — | 3 44 | 4 19 | 0 49 | 1 21 | — | 0 16 | 2 43 | 3 21 | 8 31 | 9 5 | 3 57 | 4 37 | 8 54 | 9 25 | 9 28 | 10 2 | 2 18 | 2 54 | 8 40 | 9 14 | 5 39 | 6 6 | 1 15 | 1 48 |
| S | 9 | 0 8 | 0 40 | 4 50 | 5 18 | 1 51 | 2 17 | 0 46 | 1 12 | 3 55 | 4 25 | 9 34 | 10 1 | 5 12 | 5 41 | 9 52 | 10 16 | 10 31 | 10 58 | 3 24 | 3 52 | 9 44 | 10 10 | 6 32 | 6 57 | 2 16 | 2 41 |
| S | 10 | 1 8 | 1 34 | 5 48 | 6 6 | 2 41 | 3 3 | 1 37 | 2 0 | 4 52 | 5 17 | 10 26 | 10 50 | 6 8 | 6 32 | 10 38 | 11 0 | 11 23 | 11 47 | 4 17 | 4 40 | 10 32 | 10 52 | 7 21 | 7 44 | 3 4 | 3 26 |
| M | 11 | 1 56 | 2 18 | 6 28 | 6 49 | 3 23 | 3 43 | 2 21 | 2 41 | 5 40 | 6 1 | 11 13 | 11 35 | 6 55 | 7 16 | 11 21 | 11 42 | — | 0 9 | 5 1 | 5 22 | 11 12 | 11 31 | 8 5 | 8 24 | 3 47 | 4 7 |
| Tu | 12 | 2 39 | 2 57 | 7 10 | 7 30 | 4 3 | 4 22 | 3 0 | 3 19 | 6 22 | 6 42 | 11 56 | — | 7 37 | 7 56 | — | 0 2 | 0 30 | 0 50 | 5 43 | 6 3 | 11 50 | — | 8 41 | 8 58 | 4 27 | 4 46 |
| W | 13 | 3 17 | 3 35 | 7 50 | 8 8 | 4 41 | 5 0 | 3 37 | 3 55 | 7 0 | 7 17 | 0 16 | 0 36 | 8 14 | 8 31 | 0 21 | 0 40 | 1 10 | 1 29 | 6 21 | 6 39 | 0 9 | 0 28 | 9 15 | 9 32 | 5 3 | 5 20 |
| Th | 14 | 3 52 | 4 12 | 8 25 | 8 42 | 5 18 | 5 36 | 4 13 | 4 31 | 7 34 | 7 50 | 0 55 | 1 14 | 8 47 | 9 3 | 0 58 | 1 15 | 1 47 | 2 4 | 6 56 | 7 13 | 0 46 | 1 4 | 9 48 | 10 4 | 5 37 | 5 54 |
| F | 15 | 4 29 | 4 46 | 8 59 | 9 16 | 5 54 | 6 11 | 4 48 | 5 5 | 8 6 | 8 21 | 1 33 | 1 51 | 9 18 | 9 33 | 1 31 | 1 47 | 2 21 | 2 37 | 7 30 | 7 46 | 1 22 | 1 40 | 10 20 | 10 36 | 6 11 | 6 28 |
| S | 16 | 5 1 | 5 17 | 9 33 | 9 50 | 6 28 | 6 45 | 5 22 | 5 40 | 8 36 | 8 51 | 2 8 | 2 25 | 9 48 | 10 2 | 2 3 | 2 19 | 2 53 | 3 9 | 8 2 | 8 18 | 1 58 | 2 16 | 10 53 | 11 12 | 6 45 | 7 2 |
| S | 17 | 5 34 | 5 51 | 10 7 | 10 25 | 7 3 | 7 22 | 5 59 | 6 19 | 9 6 | 9 21 | 2 43 | 3 1 | 10 16 | 10 30 | 2 36 | 2 53 | 3 25 | 3 42 | 8 34 | 8 51 | 2 34 | 2 52 | 11 35 | 11 59 | 7 20 | 7 38 |
| M | 18 | 6 10 | 6 27 | 10 45 | 11 3 | 7 43 | 8 6 | 6 39 | 7 1 | 9 38 | 9 58 | 3 19 | 3 37 | 10 46 | 11 4 | 3 11 | 3 31 | 4 0 | 4 20 | 9 10 | 9 29 | 3 12 | 3 33 | — | 0 26 | 7 58 | 8 20 |
| Tu | 19 | 6 48 | 7 11 | 11 34 | — | 8 31 | 9 0 | 7 25 | 7 54 | 10 20 | 10 45 | 3 57 | 4 20 | 11 26 | 11 55 | 3 53 | 4 20 | 4 41 | 5 6 | 9 52 | 10 20 | 3 57 | 4 25 | 0 57 | 1 32 | 8 40 | 9 15 |
| W | 20 | 7 38 | 8 3 | 0 4 | 0 33 | 9 35 | 10 15 | 8 29 | 9 8 | 11 18 | 11 47 | 4 48 | 5 19 | — | 0 30 | 4 53 | 5 32 | 5 36 | 6 10 | 10 55 | 11 34 | 4 59 | 5 35 | 2 11 | 2 52 | 9 51 | 10 31 |
| Th | 21 | 8 43 | 9 25 | 1 14 | 1 51 | 10 54 | 11 33 | 9 48 | 10 27 | — | 0 26 | 5 54 | 6 31 | 1 8 | 1 49 | 6 14 | 6 57 | 6 48 | 7 28 | — | 0 14 | 6 12 | 6 49 | 3 31 | 4 7 | 11 13 | 11 56 |
| F | 22 | 10 8 | 10 51 | 2 28 | 3 5 | — | 0 11 | 11 5 | 11 40 | 1 6 | 1 48 | 7 10 | 7 49 | 2 30 | 3 10 | 7 38 | 8 16 | 8 9 | 8 48 | 0 54 | 1 34 | 7 26 | 8 1 | 4 41 | 5 11 | — | 0 36 |
| S | 23 | 11 28 | — | 3 41 | 4 18 | 0 47 | 1 18 | — | 0 12 | 2 27 | 3 8 | 8 25 | 8 54 | 3 49 | 4 23 | 8 50 | 9 17 | 9 23 | 9 52 | 2 11 | 2 42 | 8 34 | 9 8 | 5 37 | 5 58 | 1 11 | 1 39 |
| S | 24 | 0 1 | 0 30 | 4 42 | 5 6 | 1 48 | 2 5 | 0 38 | 0 59 | 3 35 | 4 4 | 9 19 | 9 42 | 4 53 | 5 20 | 9 39 | 9 59 | 10 16 | 10 39 | 3 9 | 3 33 | 9 29 | 9 53 | 6 19 | 6 40 | 2 3 | 2 24 |
| M | 25 | 0 55 | 1 18 | 5 26 | 5 46 | 2 25 | 2 45 | 1 20 | 1 41 | 4 29 | 4 53 | 10 4 | 10 26 | 5 45 | 6 9 | 10 19 | 10 39 | 11 1 | 11 23 | 3 56 | 4 18 | 10 14 | 10 33 | 7 1 | 7 22 | 2 45 | 3 5 |
| Tu | 26 | 1 39 | 1 59 | 6 6 | 6 26 | 3 4 | 3 22 | 2 1 | 2 20 | 5 16 | 5 37 | 10 48 | 11 9 | 6 31 | 6 52 | 10 59 | 11 19 | 11 45 | — | 4 38 | 4 58 | 10 51 | 11 8 | 7 42 | 8 1 | 3 24 | 3 43 |
| W | 27 | 2 17 | 2 35 | 6 46 | 7 5 | 3 40 | 3 58 | 2 38 | 2 56 | 5 58 | 6 19 | 11 30 | 11 51 | 7 12 | 7 32 | 11 38 | 11 57 | 0 6 | 0 26 | 5 18 | 5 38 | 11 26 | 11 45 | 8 19 | 8 37 | 4 2 | 4 21 |
| Th | 28 | 2 56 | 3 15 | 7 25 | 7 45 | 4 17 | 4 37 | 3 14 | 3 32 | 6 40 | 7 0 | — | 0 12 | 7 52 | 8 12 | — | 0 16 | 0 46 | 1 6 | 5 58 | 6 18 | — | 0 5 | 8 55 | 9 13 | 4 40 | 5 0 |
| F | 29 | 3 32 | 3 51 | 8 5 | 8 25 | 4 57 | 5 18 | 3 52 | 4 12 | 7 20 | 7 40 | 0 34 | 0 56 | 8 31 | 8 50 | 0 36 | 0 56 | 1 26 | 1 46 | 6 38 | 6 58 | 0 25 | 0 46 | 9 32 | 9 51 | 5 20 | 5 40 |



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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* − *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −5 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 18 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 3 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 24 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbeliton | −0 23 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 8 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 8 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 53 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 53 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 3 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 48 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 13 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 13 | Devonport |
| Peterhead | −1 48 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 38 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 8 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 53 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 22 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 22 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 43 | London |
| Youghall | +0 13 | Queenstown |

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## MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 46 | England—S.E. Coast—South Foreland | Experimental lights. |
| 47 | „ East Coast—Haisboro' | Alteration in lights deferred until spring. |
| 48 | „ „ Onter Dowsing Light-vessel | Light and fog-signal altered. |
| 49 | „ West Coast — River Dee | New light-vessel: Air point light discontinued |
| 50 | „ „ Air and Earwig buoys | Altered in position and character. |
| 51 | Baltic Entrance—Kattegat—Ebeltofte Bay | Additional leading lights. |
| 52 | Baltic—Gottska Sandö | New light and alterations. |
| 53 | France—North Coast—Gravelines | Harbour lights altered. |
| 54 | „ „ Chaussée des Bœufs | Beacon on Le Bœuf Rock. |
| 55 | „ „ Roscoff | New leading light. |
| 56 | „ West Coast—Loire River—Saint Nazaire | Harbour light altered in character. |
| 57 | Spain—South Coast—Cadiz Bay | Buoy marking telegraph cable. |
| 58 | Mediterranean — Sardinia — Gulf of Terranova | Channel widened; new light-vessels, &c. |
| 59 | „ Italy—Gulf of Naples—Cavallara Shoal | Light temporarily discontinued. |
| 60 | „ „ Gulf of Salerno —Salerno | Beacon on west mole. |
| 61 | „ Adriatic—Istria—Cittanuova | New harbour light. |
| 62 | „ Gulf of Volo — Palea Trikiri Island and Harbour | Rocks and shoals discovered. |
| 63 | „ Greece—Morea — Cape Malea | New light. |
| 64 | „ Cyprus — Kyronia and Famagousta | New harbour lights. |
| 65 | Black Sea—Russia | Various new fog signals. |
| 66 | „ Sea of Azov—Genitches, &c. | New lights and alteration. |
| 67 | Africa—West Coast — Grand Bassa — Waterhouse Bay | Particulars of sunken rock. |
| 68 | Malacca Straits—Formosa Bank Light-vessel | Replaced in position. |
| 69 | Eastern Archipelago—Sumatra—Pulo Kombang | Shoal to south-westward. |
| 70 | „ „ Borneo — N.E. Coast | Particulars of several shoals. |
| 71 | Australia — Torres Strait — Proudfoot Shoal | New light-vessel. |
| 72 | „ East Coast—Percy Island—Pine Islets | Discovery of sunken rock near. |
| 73 | „ Newcastle Harbour | Light-vessel with fog-signal. |
| 74 | „ Edgecumbe Bay | Discovery of shoal. |
| 75 | South Australia—Spencer Gulf—Port Augusta | Channel off Orchard point dredged. |
| 76 | New Zealand—North Island—Kawhia Harbour | Beacons for South Channel. |
| 77 | „ Middle Island — Foveaux Strait—Waipapapa Point | New Light. |
| 78 | South America—Brazil — Rio Janeiro —Raza Island | Electric Light exhibited. |
| 79 | „ „ Maranhao — Santa Anna | Light altered in character. |

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MONTHLY ABSTRACT OF NAUTICAL NOTICES—*Continued.*

| No. | PLACE. | SUBJECT. |
|---|---|---|
| 80 | UNITED STATES—Gulf of Mexico—Florida —Cape San Blas | Lighthouse destroyed—temporary light on pole. |
| 81 | CANADA—Bay of Fundy—St. John Harbour—Negro Point | Permanent light on breakwater. |
| 82 | „ Nova Scotia — Cape Canso — Cranberry Island | Permanent lights re-exhibited. |
| 83 | „ Prince Edward Island—Tignish River | Additional light shown. |
| 84 | NEWFOUNDLAND — North Coast — Cape Bauld | Intended light and fog-signal in August. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

46.— ENGLAND.— *S.E. Coast.—South Foreland.—Experimental Lights.*—With reference to Notice in 1883, *experimental lights* will probably be exhibited at the South Foreland about the latter end of February. They will be shown from three temporary wooden towers, 180 feet apart, placed in a line bearing N.W. from the high lighthouse, the distance between the high light and the first experimental light being 245 feet; consequently the present permanent high and low lights will be to seaward of the experimental lights. The existing electric lights from the high and low towers will not in any way be changed or interfered with. The centre of each experimental light will be about 15 feet below that of the permanent high light. The experimental lights will necessarily have varying characteristics which cannot yet be stated definitely. It is anticipated that the full strength of the experimental lights will be visible to the northward of South Foreland within the bearing from ship of W. by S. in to the land; and to the southward within the bearing of N.E. by N. in towards the land; but further notice will be given of the approximate bearings as finally arranged, and of the date when the trials will commence.

47.—ENGLAND.—*East Coast.—Haisbro' Lights.*—With reference to Notice in 1883, the alteration in the Haisbro' lights has been deferred until the spring, when the low light will be discontinued, and the high light made occulting; that is to say, it will once in

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every half-minute suddenly disappear for five seconds, and then as suddenly reappear at full power. Further notice will be given.

48.—ENGLAND.—*East Coast.—Approach to the Wash.—Outer Dowsing Light-Vessel.—Alteration in Light and Fog-Signal.*—The *revolving red* light has been *improved* in intensity, and now shows a *flash* at periods of *thirty seconds* instead of twenty seconds as heretofore. Also, the Siren *fog-signal* has been altered, so as to give *two blasts* in quick succession *every two minutes*, in the following order: —the first blast a *low note*, the second a *high note*.

49.—ENGLAND.—*West Coast.—River Dee.—New Light-vessel and Discontinuance of Light on Air Point.*—In accordance with Notice 4, p. 45, the Dee light-vessel has been moored at the entrance of the river Dee, $\frac{6}{10}$ths of a mile E. $\frac{3}{4}$ S. from the former position of the bell buoy, and lies in 8 fathoms at low water spring tides, with the following marks and bearings, viz.:—The cupola of Hoylake church on with the south end of the lifeboat-house on Helbre island, E.; St. Elmo's summer-house open to the right of Air lighthouse, twice the width of the light tower, S.W. by W. $\frac{1}{4}$ W.; S.E. Air buoy, S. $\frac{1}{2}$ E. (distant $\frac{7}{10}$ths of a mile); South Hoyle buoy, N.W. by W. $\frac{3}{4}$ W. (distant $2\frac{7}{10}$ths miles); Earwig buoy, W. by N. (distant $3\frac{4}{10}$ths miles). The light now exhibited is a *white flash* every 10 *seconds*, at an elevation of 30 feet above the water. During thick or foggy weather a gong will be sounded. The light on Air point is now discontinued.

50.—ENGLAND.—*West Coast.—River Dee.—Alteration in Position and Character of the Air and Earwig Buoys.*—The Air bell buoy in the river Dee has been removed to the position hitherto occupied by the Earwig buoy, and is now painted in black and white horizontal bands, but the staff and globe have been removed. Also a 7-feet can buoy has been placed close to the sand off Air point, just to the southward of the position formerly occupied by the bell buoy.

51.—BALTIC ENTRANCE.—*Kattegat.—Additional Leading Lights in Ebeltofte Bay.*—With reference to Notices in 1883, on the exhibition of two leading lights at the head of Ebeltofte (Ebeltoft) bay, and that in connection therewith a harbour light would be shown from the pier at Ebeltofte, two additional lights are now

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exhibited at Ebeltofte, to lead northward of Sandhagen. They are *fixed red* lights, placed 464 yards apart in an E. by S. ¾ S. and W. by N. ¾ N. direction. The high light, elevated 72 feet above the sea, is situated on Skandsen hill, southward of the town. The low light, elevated 21 feet above the sea, is shown from the pier head of the western harbour mole. *Variation*, 12½° W.

52.—BALTIC.—*Gottska Sandö.—Light on S.E. Point, and Alteration of Light on N.W. Point*—With reference to Notices in 1883, on the intended exhibition of a light on the S.E. point of Gottska Sandö (Gotska Sandon); on 15th November, 1883, the light would be exhibited from a wooden tower, 88 feet high, erected near the seaward gable of the keeper's dwelling (red). It is a *red flashing* light, showing a flash *every five seconds*, visible seaward where the land admits, or between the bearings of about E. and S. 50° W.; elevated 39 feet above the sea, and visible from a distance of about 11 miles. Position, lat. 58° 20′ 20″ N., long. 19° 18′ 00″ E. Also, on the same date, a *flashing* light would be exhibited from the northernmost lighthouse on the N.W. point of the island. This *flashing* light is shown through an arc of 22°, or between the bearings of S. 5° E. (the direction of the two lights on the point in line) and S. 17° W., thus covering Koppar Stenarne, and fully one mile eastward and westward of that shoal ground. *Variation*, 7½° W.

53.—FRANCE.—*North Coast.—Gravelines.—Alterations in Harbour Lights.*—On 1st January, 1884, the two white tidal lights at and near Great Fort Philippe, Gravelines, for indicating the direction for entering the channel of that harbour, would be discontinued; and in lieu thereof two lights would be exhibited from iron supports with sheds, recently erected on the pier heads of the harbour:—

*East Pier Light* is a *fixed red* light, elevated 24 feet above high water (19 feet above the ground); and visible from a distance of about 4 miles; it will be exhibited throughout the night.

*West Pier Light* is a *fixed green* light, shown from two hours before high water until two hours after, indicating a depth of about 6½ feet in the channel during neap tides; elevated 24 feet above high water (19 feet above the ground); and visible from a distance of about 4 miles.

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54.—FRANCE.—*North Coast.—Chaussée des Bœufs.—Beacon on le Bœuf Rock.*—The beacon, of masonry, consists of a tower 10 feet above high water spring tides, painted white and red in horizontal bands, and surmounted by mast and globe.

55.—FRANCE.—*North Coast.—Leading Light at Roscoff.*—On 1st January, 1884, a leading light would be exhibited from iron supports (with shed) adjoining the keeper's dwelling on the S.W. side of Roscoff harbour, near the lifeboat shelter. It is a *fixed red* light, elevated 38 feet above high water (31 feet above the ground), and visible from a distance of about 8 miles. Position, lat. 48° 43′ 25″ N., long. 3° 58′ 55″ W.

*Note.*—This light kept in line with the fixed white light on the extremity of the mole will indicate the northern channel to the harbour.

56.—FRANCE.—*West Coast.—Loire River Entrance.—Saint Nazaire.—Alteration in Character of Harbour Light.*—On 1st January, 1884, the following alteration would be made in the character of the light exhibited on the mole head at Saint Nazaire, northern side of entrance to Loire river. It is a *flashing white* light with eclipses *every four seconds*; the elevation of the light and range of visibility remain as heretofore.

57.—SPAIN.—*South Coast.—Cadiz Bay.—Buoy Marking Telegraph Cable.*—The Canary Islands Telegraph Company has laid the first section of a telegraph cable, commencing from the creek between Bermeja point and Canuelo del Puerto, on the northern side of Cadiz bay, to a buoy moored with San Sebastian lighthouse bearing S. 40° E., distant 5¼ miles. The buoy is painted red, with J. R. G. T. telegraph on it in white letters. Mariners are cautioned not to anchor in the vicinity. *Variation*, 17¾° W.

58.—MEDITERRANEAN.—*Sardinia.—N.E. Coast.—Gulf of Terranova. — Port Terranova Entrance. — Channel Widened, Buoys replaced by Light-vessels.*—The entrance channel to port Terranova, south side of gulf of Terranova, has been widened (by excavating on the north side) to 98 yards. The four buoys which marked this channel have been replaced by four light-vessels. The two lights on the north side of the channel are *fixed red*, those on the south side are *fixed white* lights. The light-vessels are painted black and white in stripes.

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(2.) *Aranci Bay.—Intended Mole on East Side.*—A mole will be constructed near the railway station on the east side of Aranci bay, northern shore of gulf of Terranova.

59.—MEDITERRANEAN.—*Italy.*—*Gulf of Naples.*—*Cavallara Shoal.—Light Temporarily Discontinued.*—On 11th December, 1883, the light on Cavallara shoal, southward of Gajola rock, west side of Naples bay, was *temporarily* discontinued, in consequence of damage sustained.

60.—MEDITERRANEAN.—*Italy.—Gulf of Salerno.—Salerno.—Beacon on Western Mole.*—With reference to Notice in 1882, on the works in progress, and those about to be commenced, at the port of Salerno; a beacon has been erected to mark the extremity of the submerged works of the new west mole being constructed at that port; the beacon consists of two spars, surmounted by a disc elevated 16 feet above the sea. The spars are painted white and black in stripes; the disc, 3¼ feet in diameter, with one white stripe in the middle, and two black stripes at the sides.

*Note.*—At the distance of 11 yards from this beacon, in the direction of the roadstead, the depth is 3¼ fathoms. Between the beacon and the west end of the breakwater, there is a channel (the only one for large vessels) 328 yards in width.

61.—MEDITERRANEAN.—*Adriatic.—Istria.—Harbour Light at Cittanuova.*—A harbour light is now exhibited from an iron post above a stone pillar on the mole head at Cittanuova, south side of port Cittanuova. It is a *fixed white* light, elevated 13 feet above the sea, and visible from a distance of 3 miles. Position, lat. 45° 19′ N., long. 13° 33¾′ E.

62.—MEDITERRANEAN.—*Gulf of Volo—Palea Trikiri Island.—Ledge off North Point*—A ledge of rocks with a depth of 2 fathoms at the outer extremity, extends for a distance of 4 cables in a N.E. by E. direction, from the north point of Palea Trikiri island.

(2.) *Trikiri Harbour Approach.—Shoals near Prassuda Islet.*—A shoal with a depth of 8 feet lies with Prassuda islet bearing East, distant 6 cables; soundings of 6 to 8 fathoms were obtained about 4 cables N.N.E. from this shoal. Also, a shoal with a depth of 6 feet lies with Prasuda islet bearing N.E. by N., distant 2 cables.

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*Note.*—The passage southward of Alata island, between ports Alata and Vathudi, has a depth of 6 feet only. *Variation*, 7° W.

63.—MEDITERRANEAN.—*Greece.—Morea.—Light on Cape Malea.*—With reference to Notice in 1883, on the intended construction of a lighthouse on cape Malea (St. Angelo), south coast of Morea. On 30th November, 1883, a light would be exhibited from a lighthouse recently erected on the eastern extreme of the cape. It is a *fixed white* light, visible seaward through an arc of 170°, or between the bearings of N. 8° W. and S. 2° W.; elevated 131 feet above the sea, and should be seen from a distance of 17 miles. The lighthouse is situated 42 yards within the eastern extreme of the cape; it is 49 feet high, square, and arises above the keeper's dwelling. Position, lat. 36° 26′ 40″ N., long. 23° 12′ 30″ E. *Variation*, 7° W.

64.—MEDITERRANEAN.—*Cyprus.—Harbour Light at Kyrenia.*—On 1st December, 1883, a harbour light would be exhibited from a mast erected on the N.W. bastion of the fort at Kyrenia, north coast of Cyprus. It is a *fixed red* light, elevated 77 feet above the sea, and visible from a distance of 6 miles. Position approximate, lat. 35° 20′ 40″ N., long. 33° 19′ 10″ E.

(2.) *Harbour Light at Famagousta.*—On 1st December, 1883, a harbour light would be exhibited from a mast erected on the bastion situated on the N.W. side of the entrance to the inner harbour at Famagousta, east coast of Cyprus. It is a *fixed red* light, elevated 42 feet above the sea, and visible from a distance of 6 miles, Position approximate, lat. 35° 7′ 5″ N., long. 33° 57′ 10″ E.

65.—BLACK SEA.—*Russia.—Fog-Signals at Ochakov Point, Eupatoria Point, Yalta, Theodosia Point, and Cape Takli.*—By Notice dated November, 1883, fog-signals have been established at Ochakov point, north side of entrance to Kherson bay; also, at Eupatoria point, Yalta, Theodosia point, and cape Takli, in the Krimea. During thick or foggy weather—should a steam-whistle, horn, bell, or other sound be heard at either of these stations, indicating the proximity of a vessel—*three guns* will be fired at intervals of *three minutes*.

66.—BLACK SEA.—*Sea of Azov.—Lights at Genitches (Ghenitchesk).*—On the 16th October, 1883, two lights would be exhibited

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from a tower, erected near the town of Genitches (Ghenitchesk) They are *fixed red* lights, placed vertically, one in each storey of the tower; the higher light is elevated 81 feet above the sea; and visible from a distance of 10 miles. The lights show over an arc of 22°, or between the bearings of N. 12½° W. and N. 34½° W. The tower, built of stone, is two storeyed and square-shaped, painted white, having a dwelling house adjoining. Position approximate, lat. 46° 10¾′ N., long. 34° 52′ E. *Variation*, 1½° *W.*

(2.) *Temporary Light on Berdiansk Point.*—By Notice dated October, 1883, in consequence of damage to the machinery, the electric light on the southern extremity of Berdiansk point, would be temporarily shown as a *fixed* light, until the repairs to the apparatus of the flashing light are completed.

67.—AFRICA.—*West Coast.—Grand Bassa.—Particulars of Sunken Rock in Waterhouse Bay.*—With reference to Notice 27, p. 53, on the existence of a sunken rock in the anchorage of Waterhouse bay, situated about 9 cables north-westward of Yellow Will reef; the locality has been examined by Lieutenant Pullen, R.N., Admiralty Surveying Officer. This rock, small in extent, consists of several sharp pinnacles, with a least depth found of 2¼ fathoms at low water spring tides; it lies with the following bearings and distance:—Agents' house, Grand Bassa, N. 47° E., distant $1\frac{9}{10}$ths mile; the outermost Dhouat rock, S. 32° E., or about one cable S.S.W. of the position previously assigned.

*Note.*—From the temporary character of the buoy marking this danger, dependence should not be placed on its being in position. *Variation*, 20¼° *W.*

68.—MALACCA STRAIT.—*Formosa Bank Light-Vessel Replaced in Position.*—With reference to Notice in 1883, on Formosa bank light-vessel having been replaced by the Government schooner *Horsburgh* pending repairs. On or about 15th October, 1883, the light-vessel would be replaced in her station southward of Formosa bank, exhibiting the same *flashing white* light as formerly.

69.—EASTERN ARCHIPELAGO.—*Sumatra.—Shoal South-Westward of Pulo Kombang.*—Lying about 5¼ miles S.W. by W. ½ W. from Pulo Kombang, west coast of Sumatra. This shoal, seen in a N.N.W. direction from the distance of half-a-mile, has an estimated



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depth of 4 to 5 fathoms on it, and lies with the following bearings :—Pulo Kombang, N.E. by E. ½ E.; Pulo Niamo (Muskito), N.W. ¾ N.; west extreme of Pulo Merak, N. by W. ¼ W. These bearings place the shoal in approximately, lat. 1° 22′ S., long. 100° 21′ E. *Variation*, 2° *E.*

70.—Eastern Archipelago.—*Borneo.*—*N.E. Coast.*—The following information, resulting from a recent examination made in H.M. surveying vessel *Magpie*, relative to certain dangers lying between Sandakan harbour and Tambisan island, N.E. coast of Borneo, has been received.

(1.) *Particulars of Nymphe Reef.*—Nymphe reef, consisting of coral and sand, with several heads on which the least water is 3 feet, extends in a N. by E. ¼ E. and S. by W. ¼ W. direction for a distance of $1\frac{8}{10}$ths mile, with a breadth of 7 cables; the shoalest part is situated in lat. 5° 44′ 12″ N., long. 118° 40′ 36″ E. From this position mount Hatton bears S. 6° E., distant 29 miles.

(2.) *Particulars of Pegasus Reef.*—Pegasus reef (reported by H.M.S. *Pegasus* in 1882), $1\frac{6}{10}$ths mile in diameter, is composed of coral and sand, with rocky patches on the eastern side, on which the depths are 3 to 4 feet; the shoalest part lies in lat. 5° 45′ 50″ N., long. 118° 50′ 30″ E. From this position mount Hatton bears S. 12° W., distant 31½ miles.

*Note.*—On the position of a shoal reported by H.M.S. *Fly* in 1883 as lying north-westward of Peri bank, in approximately lat. 5° 53′ N., long. 118° 47′ E., a depth of 33 fathoms was obtained by the *Magpie*, with 31 to 39 fathoms around, bottom generally hard. This reported shoal is therefore considered identical with Pegasus reef, and has been removed from the Admiralty charts.

(3.) *Particulars of Gem Reef.*—Gem reef (originally reported by the brig *Gem*), consisting of coral and sand, extends in a N.W. by W. ¼ W. and S.E. by E. ¼ E. direction for a distance of $3\frac{3}{10}$ths miles, with a breadth of $1\frac{7}{10}$ths mile; near the centre, there are two rocks with 4 and 7 feet on them respectively; depths of 40 fathoms were found on its northern and eastern sides, and 30 fathoms on the southern and western edges. The shoalest part is situated in lat. 5° 35′ 15″ N., long. 119° 8′ 24″ E. From this position, West point of Tambisan island bears S. 13° W.,

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distant $8\frac{6}{10}$ths miles, and mount Hatton, S. 49½° W., distant $32\frac{6}{10}$ths miles.

*Note.*—The shoal reported by H.M.S. *Swinger* in 1878, as being situated in lat. 5° 34′ N., long. 119° 10′ E., is considered to be identical with Gem reef.

(4.) *Particulars of René Shoal.*—René shoal, lying between Tambisan island and Gem reef, with a depth of 25 fathoms between the reef and the shoal, extends in a N.W. ¾ W. and S.E. ¾ E. direction for a distance of $4\frac{7}{10}$ths miles, with a breadth of $1\frac{6}{10}$ths mile, and has average depths of 5 to 7 fathoms on it. A depth of 3 fathoms was found near its S.E. end, lying with the following bearings and distance:—Eastern extreme of Tanjong Unsang, S. 36° E.; West point of Tambisan island, S. 59½° W., distant $4\frac{7}{10}$ths miles. Position, lat. 5° 29′ 40″ N., long. 119° 10′ 20″ E.

*Note.*—René shoal and Modeste shoal, which had been reported to be situated in lat. 5° 30′ N., long. 119° 11′ E., are identical.

*Positions.*—Mount Hatton, 1,990 feet in height, should be placed in lat. 5° 15′ 5″ N., long. 118° 42′ 30″ E.; West point of Tambisan island in lat. 5° 27′ 00″ N., long. 119° 6′ 10″ E.

(5.) *Unsuccessful Search for Peri Bank.*—The *Magpie* crossed the reported position of Peri bank (lat. 5° 47′ N., long. 118° 56½′ E.), obtaining 48 fathoms, and no indication of shoal water was seen; its existence therefore in the position assigned is considered doubtful. *Variation*, 2° *E.*

71.—AUSTRALIA.—*Torres Strait.—Western Approach.—Light-vessel S.W. of Proudfoot Shoal.*—In the early part of November, 1883, a light-vessel would be placed about one mile S.W. of Proudfoot shoal, western approach to Torres strait. The light is an *occulting white* light, eclipsed for *four seconds* at intervals of *ten seconds;* elevated 40 feet above the sea, and visible from a distance of about 11 miles. Position approximate, lat. 10° 31′ 45″ S., long. 141° 27′ 45″ E.

72.—AUSTRALIA.—*East Coast.—Northumberland Islands.—Percy Isles.—Sunken Rock North-Westward of Pine Islets.*—Lying north-westward of Pine islets, Percy isles, this danger (*Edith rock*), about 20 yards in extent and sloping to the southward, has 2 feet



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on its shoalest part at low water spring tides, and 10 fathoms close-to on the northern edge; it lies with the following mark, bearing, and distance:—N.E. extremity of Pine islets (in line with the first high hill northward of Hixson point, Middle island) bearing S.E. ¼ S., distant about one mile.

*Note.*—It is stated, that there are indications of foul ground northward of Edith rock. *Variation*, 8¼° *E.*

78.—AUSTRALIA.—*East Coast.—Newcastle Harbour.—Light-vessel with Fog-signal.*—On the 1st October, 1883, the two *red* lights previously exhibited from the floating powder magazine on the south side within the entrance to the harbour, would be shown from a light-vessel moored in 9 feet water, near the black buoy (northward of the outer end of the loading wharf), which would be withdrawn. During thick or foggy weather, a bell will be sounded at short intervals on board this light-vessel.

74.—AUSTRALIA.—*East Coast.—Shoal in Edgecumbe Bay.*—Lying on the western side of Edgecumbe bay, in a position dangerous to shipping. This shoal, on which the steam-vessel *Chyebassa* touched, has been found on examination to be about a quarter of a mile in extent, to be composed of coral, shells, and boulders, and to have not more than 13 feet on it at low water. It lies with the following bearings:—West extreme of Middle island, N. ½ E.; north end of Gloucester island, N.E. ¼ N.; Ben Lomond peak, S.E. by E. ¼ E., Ely. *Variation*, 7½° *E.*

75.—SOUTH AUSTRALIA.—*Spencer Gulf.—Channel Leading to Port Augusta off Orchard Point.*—A channel off Orchard point, about 800 yards in length, and 50 yards in width, has been dredged to a depth of 18 feet at low water springs, and is marked on the west side by three tub-shaped buoys, surmounted by staff and ball, and painted black; and on the east side by two tub-shaped buoys, surmounted by staff and ball, painted red. There is now a clear channel of not less than 18 feet at low water springs up to port Augusta.

76.—NEW ZEALAND.—*North Island.—West Coast.—Kawhia Harbour.—Beacons for South Channel.*—Two beacons have been erected at Kawhia harbour entrance. The outer beacon is situated on the rock off south head at the harbour entrance. The inner

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beacon is on the south side of Te Motu islet, about 1½ mile within the entrance. These beacons are painted white, and kept in line bearing E.S.E. lead over the bar of south channel in 17 feet at low water. As soon as the bar is crossed, vessels should proceed by the directions given in the New Zealand pilot, which still hold good. *Variation*, 13° *E.*

77.—New Zealand.—*Middle Island.—South Coast.—Foveaux Strait.—Light on Waipapapa Point.*—With respect to a lighthouse in course of construction on Waipapapa point, north side of eastern entrance to Foveaux strait, it was anticipated the light would be ready for exhibition about the month of January, 1884. It will be a *flashing white* light, showing a flash *every ten seconds.* Position approximate, lat. 46° 39½′ S., long. 168° 52½′ E. Further notice will be given.

78.—South America.—*Brazil.—Rio de Janeiro Harbour Approach.—Raza Island.—Electric Light Exhibited.*—With reference to Notice in May, 1883, on the intended exhibition of an *electric* light from a lighthouse on Raza island, Rio de Janeiro harbour approach; and the exhibition of a temporary light during the progress of the works; on the 2nd December, 1883, the *electric* light would be exhibited. It is a *revolving* light, showing *two white flashes* and *one red flash* of about *four seconds'* duration each, with an interval of about *eleven seconds* between each flash; elevated 315 feet above the sea, and visible from a distance of 24 miles. The temporary light is discontinued. Position, lat. 23° 3¼′ S., long. 43° 8¼′ W.

79.—South America.—*Brazil.—Maranhao.—Santa Anna Light.—Alteration in Character.*—On 2nd December, 1883, the following alteration would be made in the character of the light exhibited on the East side of Santa Anna island; it is a *flashing* light, showing in succession *two white flashes* and *one red flash* of equal power, with an interval of *thirty seconds* between the flashes; elevated 190 feet above high water, and visible from a distance of 20 miles. The new lighthouse (situated about one mile westward of the old lighthouse) is 148 feet high, constructed of iron, cylindrical in shape, and painted white. Position, lat. 2° 16′ 20″ S., long. 43° 36′ 30″ W.

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80.—UNITED STATES.—*Gulf of Mexico.—Florida.—Temporary Light at Cape San Blas.*—With reference to Notice in 1882, on the dangerous condition of the lighthouse at cape San Blas, Florida; and exhibition of an auxiliary light from a pole, when it was impracticable to exhibit the light from the lighthouse; the lighthouse has been destroyed, and a *fixed white* light is temporarily shown from a pole situated near the site of the lighthouse.

81.—CANADA.—*Bay of Fundy.—St. John Harbour—Negro Point Breakwater.—Re-Exhibition of Permanent Light.*—With reference to Notice in 1879, on the destruction of the breakwater at Negro point, St. John harbour, with consequent removal of the lighthouse, and exhibition of a temporary light; on 24th November, 1883, the permanent light would be re-exhibited from the lighthouse which has been re-erected on the new stonework at the outer end of the breakwater. It is a *fixed red* light, elevated 40 feet above high water, and visible seaward from a distance of 8 miles. The lighthouse, 35 feet high, is situated 50 feet within the extremity of the breakwater on a circular foundation; it consists of an open frame tower, hexagonal in shape and painted white, lantern red.

82.—CANADA.—*Nova Scotia.—Cape Canso.—Permanent Lights Re-Exhibited on Cranberry Island.*—With reference to Notice in 1881, on the exhibition of two provisional lights on Cranberry island, northward of Cape Canso—in lieu of those destroyed by fire; on 1st December, 1883, the permanent lights would be exhibited from the new lighthouse, in lieu of the provisional lights. They are two *fixed white* lights, placed vertically, as heretofore. The upper light is elevated 89 feet above high water, and visible from a distance of 15 miles; the lower light is elevated 54 feet above high water, and should be seen from a distance of 12 miles, but is not visible to vessels passing between Cranberry island and the coast. The lighthouse, erected on the site of the old building, consists of a tower with keeper's dwelling attached; the tower, 78 feet high, shows octagonal in shape, 48 feet above the roof of the dwelling; it is painted red and white in horizontal bands; the dwelling is of a dark colour.

83.—CANADA.—*Prince Edward Island.—N.E. Coast.—Tignish*

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*River Entrance.—Additional Light Exhibited.*—With reference to Notice in 1881, on the exhibition of a light from a lighthouse erected on the beach at the inner end of the north breakwater pier at Big Tignish river entrance; on 15th September, 1883, a light was exhibited on the outer end of the north breakwater pier at Big Tignish river entrance—to indicate the position of the pier head, and when kept in line with the light (fixed white) at the inner end of the north breakwater, to lead in between the breakwaters. It is a *fixed red* light, elevated 18 feet above high water, and visible seaward from a distance of 5 miles; it bears S.E. ½ E. from the principal light, distant 207 yards. This light, shown from a pole, 14 feet high and painted white, is for the convenience of fishing boats and other light draught vessels only. *Variation*, 24½° *W.*

84.—NEWFOUNDLAND.—*North Coast. — Cape Bauld.—Intended Light and Fog-signal.*—On or about 15th August, 1884, a light will be exhibited from a lighthouse erected on the high ground near the extremity of cape Bauld, the northern point of Kirpon island, and south side of entrance to strait of Belle-isle; it will be an *alternating red and white* light, each flash attaining its greatest brilliancy *every forty-five seconds;* elevated 141 feet above high water, and visible seaward from a distance of 18 miles; the lighthouse, 60 feet high, consists of a square tower constructed of wood and painted white, with keeper's dwelling attached. Position, lat. 51° 38′ 50″ N., long. 55° 25′ W. Also, on 15th August, 1884, or as much earlier in the season as instructions can be sent to the light-keeper, a *fog-signal* will be established about fifty yards from cape Bauld lighthouse; the signal will be a horn worked by compressed air, which, during thick or foggy weather, will give blasts of *ten seconds'* duration with an interval of *fifty seconds* between each blast.

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CHARTS, PLANS, &c., PUBLISHED BY THE HYDROGRAPHIC DEPARTMENT, ADMIRALTY, IN NOVEMBER AND DECEMBER 1883.

| *No.* | | *s.* | *d.* |
|---|---|---|---|
| 620 | North America, east coast:—Penobscot bays ... | 2 | 0 |
| 1772 | Ireland, east coast:—Approaches to Wexford Harbour ... ... ... ... | 2 | 6 |

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| *No.* | | *s.* | *d.* |
|---|---|---|---|
| 97 | South Pacific ocean :—Anchorages in the Solomon islands ... ... ... ... ... | 1 | 6 |
| 2208 | Black sea :—Dniester estuary ... ... ... | 1 | 6 |
| 536 | Sado island and adjacent coast of Nipon (plans, Sakata harbour. Ogi bay. Niegata roadstead. Kamo harbour) ... ... ... ... | 1 | 6 |
| 1468 | Ireland, east coast :—Wicklow to Skerries islands, with Dublin bay ... ... ... ... | 2 | 6 |
| 44 | Ireland, east coast :—Skerries islands to lough Carlingford, with Dundalk bay ... ... | 2 | 6 |
| 1640 | Plans added, Port Tai-oa. Vaieo or Akaoto bay. Perigot bay. Hakahe Tau. | | |
| 1676 | Plan added, Patras roads. | | |
| 1874 | Plan added, Port Howard. | | |

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CHARTS THAT HAVE RECEIVED IMPORTANT CORRECTIONS.

*No.*

905. Fiji islands :—Suva harbour to Levuka.
1809. Africa, east coast :—Mozambique to Pomba bay.
1381. Africa, north coast :—Benzert road and lakes.
2347. Japan :—Nipon, Kiusiu, and Sikok island.
280. Newfoundland :—Notre Dame bay.
2010. England, west coast :—Morecambe bay.
1258. Korea :—Approaches to Séoul.
1975. England, east coast :—Kentish Knock and the Naze to West Swin.
1610. England, east coast :—North Foreland to Orfordness.
2121. New Guinea, south coast :—Freshwater bay to Round head.
2122. New Guinea, south coast :—Round head to Orangerie bay.
780. Pacific ocean :—South-west sheet.
2307. Norway, west coast :—Smōelen island to Svee fiord.
2300. Baltic sea :—Stiernö point to Umea light.
2056. Eastern Archipelago :—Sunda strait.
767. South Pacific ocean :—Paumotu or Low Archipelago.
2123. New Guinea :—Orangerie bay to Bramble haven.

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*No.*

2247. Baltic sea :—Hogland to Seskär.

650. Africa, east coast :—Kilimani or Quilimane river.

123. Africa, south coast :—Table bay breakwater and docks.

941*a*. Eastern Archipelago, western portion.

2062. China : —Tong-King gulf.

1380. South Pacific ocean :—New Caledonia, New Hebrides, and Loyalty islands.

764. South Pacific ocean :—New Hanover, New Island, and New Britain.

156. Baltic sea :—Mäseskär to Hållö.

2205. Black sea :—Kertch strait.

1466. China .—Hong Kong.

1342. China : —Phan-rang bay to Tong-King gulf.

358. Japan :—The western coast of Kiusiu and Nipon.

1308. South America, east coast :—Santa Cruz, port and river.

1083. Tasmania :—Burnett harbour and Port Arthur.

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HYDROGRAPHIC NOTICES ISSUED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY, 1883.

*No.*

35.—WEST COASTS OF FRANCE, SPAIN, AND PORTUGAL. Relating to the west coasts of France, Spain, and Portugal.

36.—PACIFIC OCEAN. Relating to islands in the Ellice, Gilbert, and Marshall groups.

37.—NORTH SEA PILOT, Part IV. Relating to the west coasts of Germany and Denmark.

38.—MEDITERRANEAN PILOT, vol. 2. Relating to the coasts of France, Corsica, Italy, Cyprus, and Karamania.

39.—SOUTH INDIAN OCEAN. Relating to the west, north-west, and north-east coasts of Madagascar.

40.—AFRICA PILOT, Part III. Relating to the east coast of Africa, and to portions of Comoro islands.

41.—CHINA SEA DIRECTORY, vol. 2. Relating to the China sea and to various portions of the adjacent coasts.

42.—MEDITERRANEAN PILOT, vol. 3. Relating chiefly to ports and anchorages in the Adriatic.

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No.

43.—South Indian Ocean. Relating to the east coast of Madagascar.

44.—China Sea Directory, vol. 1. Relating chiefly to Carimata strait.

45.—China Sea Directory, vol. 4. Relating to the west, south, and south-east coasts of the Korea.

Books.

| | s. | d. |
|---|---|---|
| Remarks on Revolving Storms, 3rd edition, 1883 ... | 0 | 3 |
| West India Pilot, vol. 1.:—From Cape North of the Amazons to cape Sable, in Florida, with the adjacent islands, 4th edition, 1883 ... ... ... | 5 | 0 |
| New Zealand Pilot:—Including also the Chatham islands and the off-lying islands southward of New Zealand, 5th edition, 1883 ... ... ... | | |

## OUR OFFICIAL LOG.

Official Return of British Wrecks in December.—The number and tonnage of British vessels respecting whose loss reports were received at the Board of Trade during the month of December, 1883, and the number of lives lost are as follow:—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing ..... | 116 | 25,886 | 203 |
| Steam..... | 15 | 6,418 | 2 |
| Total ..... | 131 | 32,304 | 205 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in December relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—Thomas Gray, Assistant-Secretary, Marine Department.—Board of Trade, 5th January, 1884.

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NOMINAL HORSE-POWER OF ENGINES. — The nominal horse-power of the engines of steamships has to be inserted by the surveyors in the certificate of survey (surveys 59). The surveyors have hitherto inserted in the form, and without verification, any statement of nominal horse-power given for that purpose by the owners or their agents. Experience has shown that the statements are often untrustworthy. The surveyor should in future not receive these statements as to nominal horse-power without verifying them by the following rule, viz.:—1. For ordinary condensing engines—D = Diameter of cylinder in inches; N = Number of cylinder.

$$\frac{D^2 \times N}{30} = \text{N.H.P.}$$

2. For compound condensing engines—D = Diameter of low pressure cylinder in inches; $d$ = Diameter of high pressure cylinders in inches; N = Number of low pressure cylinders; $n$ = Number of high pressure cylinders.

$$\frac{(D^2 \times N) + (d^2 \times n)}{30} = \text{N.H.P.}$$

And he should insert the result in his certificate of survey as he arrives at it by the above rule. — T. H. FARRER, Secretary; THOMAS GRAY, Assistant-Secretary.

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OFFICIAL INQUIRIES AT HOME, 1883.

2011. *Ben Nevis*, s.s.; built at Sunderland, 1872; owned by Mr. S. A. Morrison and others; tonnage, 636; Taganrog to Trieste; wheat; stranded on Bielosarai Spit, Sea of Azov, September 18, 1883. Inquiry held at Newcastle, December 8, 1883, before Rothery, Wreck Commissioner; Methven and Kennedy, N.A. Accident caused by negligent navigation on master's part, but as neither ship or cargo suffered material damage, certificate was not dealt with.

2014. *Boyne*, s.s.; built at West Hartlepool, 1881; owned by the Mercantile Steamship Company; tonnage, 1,805; Algiers to Baltimore; iron ore; stranded near Cape Henry, U.S., September 11, 1883. Inquiry held at Cardiff, December 8, 1883, before

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Jones, Judge; Beasley and Hyde, N.A. Casualty due to thick weather and the master under estimating his distance from the land. Master not in default.

2015. *Staincliffe*, s.s.; built at Stockton-on-Tees, 1877; owned by Mr. T. Appleby and others; tonnage, 847; Taganrog to Malta; rye; stranded near Bielosarai Spit, Sea of Azov, October 11, 1883. Inquiry held at Newcastle, December 10, 1883, before Rothery, Wreck Commissioner; Methven and Kennedy, N.A. No material damage. Master's certificate not dealt with.

2016. *Condor*, s.s.; built at Glasgow, 1881; owned by Cork Steamship Company; tonnage, 649; Liverpool to Amsterdam; general cargo; ost off the North Pier, Ymuiden, Zuyder Zee, November 18, 1883, when loss of life ensued. Inquiry held at Liverpool, December 13, 1883, before Raffles, Judge; Parish, Grant and Harland, N.A. Casualty caused by the wheel chains parting at a critical moment when ship was in such a position that nothing could be done to prevent her going ashore. Master not in default.

2017. *Alpha*, barque; built at Bridport, 1864; owned by the Swansea Merchant Shipowners' Company, Limited; tonnage, 397; Leith to Buenos Ayres; coals; took fire and foundered off Buenos Ayres, September 6, 1883. Inquiry held at Newcastle, December 11, 1883, before Rothery, Wreck Commissioner; Methven and Kennedy, N.A. Fire due to spontaneous combustion. No blame attached to master.

2018. *Harold*, s.s.; built at West Hartlepool, 1877; owned by Mr. T. E. Pyman and others; tonnage, 839; Hartlepool to Swinemunde; coals; stranded on Bremo Island, Gulf of Bothnia, September 10, 1883. Inquiry held at Newcastle, December 12, 1883; before Rothery, Wreck Commissioner; Methven and Kennedy, N.A. Master in default for allowing the vessel to go considerably to the westward of her course; for neglecting to verify his position, and for going below when the weather was thick and the vessel in close proximity to the land. Certificate suspended for six months.

2019. *Hymettus*, s.s.; built at Sunderland, 1883; owned by Mr. T. Kish and others; tonnage, 776; Rotterdam to Bilbao; ballast; stranded on the coast of Holland, November 18, 1883.

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Inquiry held at Newcastle, December 18, 1883, before Rothery, Wreck Commissioner; Methven and Kennedy, N.A. Stranding caused by the ship having got into the trough of the sea and become unmanageable. Master entirely free from blame.

2021. *Limerick*, s.s.; built at Newcastle, 1865; owned by steamship "Limerick" Company; tonnage, 575; Stockholm to Gefle; iron; stranded on Eggrunde Island, off Gefle, September 6, 1883. Inquiry held at Swansea, December 18, 1883, before Fowler, Judge; Parfitt and Pattison, N.A. Casualty due to error of master in under estimating his distance from the light, and in shaping a course too close thereto. Master not in default.

2022. *Elta*, brigantine; built at Prince Edward's Island, 1873; owned by Mr. A. Stephens and others; tonnage, 213; Swansea to Caravelas; coals; lost on Paredis Reef, Coast of Brazil, September 25, 1883. Inquiry held at Swansea, December 15, 1883, before Fowler, Judge; Parfitt and Pattison, N.A. Casualty due to error in assumed position of vessel. Master in default for not using, after stranding, every exertion to save the vessel. Certificate suspended for six months.

2023. *Fulmar*, s.s.; built at Middlesborough, 1868; owned by Mr. J. Dixon and others; tonnage, 418; Middlesborough to Boulogne; pig-iron; stranded near Entrance of Boulogne Harbour, November 20, 1883. Inquiry held at Westminster, December 15, 1883, before Rothery, Wreck Commissioner; Forster and Ronaldson, N.A. Casualty due to vessel being caught by current at entrance of harbour and becoming unmanageable. Master not in default.

2027. *Mary and Catherine*, brig; built at Sunderland, 1865; owned by Mr. J. Nicholson; tonnage, 280; Liverpool to Natal; coals; abandoned at sea, October 4, 1883. Inquiry held at Liverpool, December 24, 1883, before Raffles, Judge; Beasley and Hyde, N.A. Abandonment justifiable, vessel having suffered considerably in a gale of wind, losing her long boat, and being half-full of water.

2029. *Lord Marmion*, barque, and *Jane Bacon*, s.s.; the former built at Swansea, 1865; owned by Messrs. Richardson; tonnage, 480; Swansea to Valparaiso; coals; the latter built at Seacombe,

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1865; owned by Mr. J. Bacon; tonnage, 438; Bristol to Liverpool; general cargo. In collision off Scarweather Lightship, when the *Lord Marmion* foundered and loss of life ensued, November 30, 1883. Inquiry held at Bristol, December 22, 1883, before Rothery, Wreck Commissioner; Castle, Pickard and Vaux, N.A. Collision due to the want of a proper look-out on board the *Jane Bacon*. Second mate to blame, but he had no certificate.

2031. *Ridesdale*, barque; built at Sunderland, 1859; owned by Mr. J. Ransom; tonnage, 374; Copenhagen to Hernosand; ballast; stranded in Markallen Shoal, Gulf of Bothnia, July 31, 1883. Inquiry held at Westminster, December 20, 1883, before Rothery, Wreck Commissioner; Hight and Ronaldson, N.A. Stranding caused by a current setting vessel to S.S.E. unknown to master. Certificate not dealt with.

2032. *St. Andrew's Castle*, barque; *Galatea*, barque; the former built at Sunderland, 1865; owned by Mr. T. Skinner; tonnage, 639; Middlesborough to Buenos Ayres; pig iron; the latter built at Dundee, 1869; owned by Dundee Shipowners' Company; tonnage, 580; Hull to Buenos Ayres; railway iron; in collision in Bay of Biscay, November 15, 1883, when both vessels foundered, and loss of life ensued. Inquiry held at Westminster, December 20, 1883, before Rothery, Wreck Commissioner; Hight and Ronaldson, N.A. Accident caused by the *St. Andrew's Castle* close-hauled on the port tack, not giving way to the *Galatea* close-hauled on the starboard tack. Neither master to blame.

2034. *Boy Jack*, smack; *J. M. Strachan*, s.s.; the former built at Yarmouth, 1880; owned by Mr. Balls; tonnage, 47; on a fishing cruise; the latter built at Howdon-on-Tyne, 1865; owned by Mr. S. Clarke and others; tonnage, 495; Southampton to the Tyne; ballast; in collision near Scroby Sand, November 29, 1883, when the *Boy Jack* foundered and loss of life ensued. Inquiry held at North Shields, December 21, 1883; before Stevenson and Green, Justices; Curling, Wilson and Moresby, N.A. Collision caused by the steamer not complying with Articles 17 and 18 of the Regulations, for which the mate was to blame. Censured.

2038. *Boadicea*, s.s.; built at Hebburn-on-Tyne, 1872; owned

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by Mr. H. E. Adamson and others; tonnage, 865; Tyne to Savona; coals; lost on the Shingles Sand, December 6, 1883. Inquiry held at North Shields, December 29, 1883, before Spence and Jackson, Justices; Parish and Harland, N.A. Master in default for not using means to verify his position, and for making no allowance for tide; but having regard to his high character, certificate not dealt with.

2040. *Castle Crag*, s.s.; built at Newcastle-on-Tyne, 1883; owned by Castle Crag Steamship Company; tonnage, 1,594; Odessa to Antwerp; grain, oil-cake, &c.; stranded on Brook Ledges, Isle of Wight, December 14, 1883. Inquiry held at Liverpool, January 4, 1884, before Raffles, Judge; Forster and Wilson, N.A. Master in default for making no allowance for tide, neglecting the lead, and running at full speed and with sail upon the ship in thick weather. Certificate suspended for six months.

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### Official Inquiries Abroad, 1883.

2012. *Acadian*, barque; stranded at Juan Fernandez Island, September 8, 1883. Naval Court held at Valparaiso, October 19, 1883. Master acquitted of blame.

2013. *Q. C. Trufant*, ship; stranded on Fiery Cross Reef, China Sea, September 7, 1883. Inquiry held at Hong Kong, October 23, 1883. No blame attached to master. Accident caused by unusually strong current.

2020. *Peeress*, brig; stranded on Beak Cay, Great Bahama Bank, August 22, 1883. Inquiry held at New Providence, September 4, 1883. Master and mate both to blame for careless navigation. Certificates suspended for six and three months respectively.

2024. *Emily Ann*, ketch; stranded on Mermaid Reef, Port Macquarie, August 24, 1883. Inquiry held at Sydney, October 8, 1883. Master guilty of careless navigation. Certificate suspended for six months.

2025. *Queenscliffe*, s.s.; stranded near Portsea Jetty, September 3, 1883. Inquiry held at Melbourne, September, 14, 1883.

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Accident caused by the parting of a hawser. Master free from blame.

2026. *Airy*, s.s.; lost at Nishto, near Ras Fartak, August 16, 1883. Inquiry held at Bombay, October 22, 1883. Both master and mate to blame for careless navigation, and for neglecting to correct the rate of the chronometer when in port. Master's certificate suspended for three months.

2028. *Porto Salvo*, barque; *Penelope*, Greek brig; in collision in the Grecian Archipelago, November 26, 1883. Inquiry held at Malta, December 11, 1883. *Penelope* in default for neglecting to carry the Regulation lights.

2030. *Nemesis*, s.s.; in collision with a silt barge in tow of steamer *Ajax*, August 8, 1883. Inquiry held at Newcastle, N.S.W., November 1, 1883. Master of *Nemesis* to blame for neglecting Article 20 of the Steering and Sailing Rules. Cautioned.

2033. *Minnie Gordon*, barque; lost on North Cape, Prince Edward's Island, November 6, 1883. Inquiry held at St. John's, N.B., December 3, 1883. Master and mate to blame for negligent navigation. Certificate suspended for one year.

2035. *Larkspur*, barque; founded in Port Louis Road, September 27, 1883. Inquiry held at Mauritius, October 12, 1883. Loss occasioned by master heaving the ballast overboard and proceeding in tow with an empty hold. Master drowned.

2036. *Florence*, schooner; stranded in Montagu River, Tasmania, October 4, 1883. Inquiry held at Montagu, October 25, 1883. Casualty due to vessel failing to answer her helm. Master exonerated from blame.

2037. *George Leed*, schooner; lost on the Mostardas Coast, October 4, 1883. Naval Court held at Rio Grande do Sul, October 27, 1883. Master to blame for negligence. Certificate suspended for six months.

2039. *Selembria*, s.s. Inquiry held at Amoy, November 8, 1883, as to cause of fire, which took place on board on November 4, 1883. Fire due to breaking of the anchor light.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. III.

MARCH, 1884.

## MERCHANT SHIPPING BILL, 1884.

### MEMORANDUM.

THE object of this Bill is to promote the security of life and property at sea, and the leading principle of the Bill is to make it the interest as well as the duty of every shipowner to bring his venture to a safe termination.

The Bill is divided into three principal parts. The first of these deals with proposed alterations in the law; the second, with the statutory procedure for the detention of unseaworthy ships and inquiries into shipping casualties; and the third, with the system of tonnage measurement.

As to the first part, the leading principles on which the proposed amendment of the law is based are: first, that in no case should the loss of or casualty to a ship be a source of gain to her owner; and, secondly, that the loss of or casualty to a ship should in cases of avoidable negligence subject the owner to liability.

As to the second part, the design of the Bill is to improve the system of detention of unseaworthy vessels and official inquiries



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into casualties; in detention cases, by diminishing as far as possible official interference, and casting the responsibility for seaworthiness on the shipowners themselves; and in official inquiries, by giving the body of shipowners and certificated officers representation on the tribunals to hold such inquiries.

The part of the Bill which deals with tonnage measurement is based on the report of the Royal Commission on Tonnage, and is designed to carry out the recommendations of that report.

## PART II.—AMENDMENT OF THE LAW.

The subjects which are dealt with in this part of the Bill, and with reference to which the Bill proposes to alter and amend the law, are these: the law of marine insurance; the law relating to shipowners and seamen; the law of carriage by sea of goods and persons; the laws relating to compulsory pilotage; the law in relation to joint stock companies as owners of ships; and the criminal law as it affects persons engaged in the management and navigation of ships.

THE LAW OF INSURANCE.—The general principles of the Bill are, first, to alter the law so as to prevent a person by means of the contract of insurance obtaining in any case more than an indemnity for any loss he may actually suffer by the loss of or damage to the thing insured; and, secondly, to prevent a shipowner recovering anything under a marine insurance if his ship is unseaworthy at starting, or if the loss is due to unseaworthiness which might have been prevented.

There are two kinds of indemnity, one which places the insured person, in case of loss, in the same pecuniary position as if he had not embarked on the adventure, and the other which places the insured person, in case of loss, in the same position as if the adventure had been successfully carried out.

It is on this latter principle that the indemnity part of the Bill is founded. Under its provisions a shipowner or person embarking in a marine adventure will be able to insure everything which he exposes to risk.

The principal methods by which, as the law at present exists, it is possible by means of the contract of marine insurance for the loss of the thing insured to be made a source of gain to the person who has

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effected an insurance on it are the following, viz.; over valuation of the thing insured by means of valued policies; insurance of the same thing twice over in policies on different subject matters; insurance of freight without deducting the expenses saved by the loss; and illegal or, as they are termed, "honour" policies. The first of these methods exists by reason of the doctrine that a valuation by agreement in a policy, even when largely in excess of the real value of the thing insured, is, in the absence of fraud, binding. The second method may be thus described: "Very often the owner over-values the subject of insurance by adding to the value of the ship all the expenses of her outfit, including provisions and that part of the wages which is paid at the beginning of the voyage, when he separately insures the whole of the freight. The consequences of this kind of over valuation are so dangerous" (adds the author of this passage) "that they deserve the attention of the Legislature." (Benecke's Principles of Indemnity.) The third method consists in the recovery from the underwriter of moneys which have never been expended. The last method, that of "honour" policies, means insurances by policies which are void as wagering policies, or as contrary to the provisions of Acts of Parliament, and, therefore, not enforceable. A policy on such a thing as "freight as if chartered," *i.e.*, on freight which has not been contracted for, and is therefore speculation, is an instance of an "honour" policy.

Clauses 5 to 13 of the Bill are those which are designed to prevent over insurance. In the first place they restrict the insured person in all cases of loss to an indemnity; and, secondly, they make void any valuation in a valued policy which is in excess of what is the real value of the thing insured. Valued policies, so far as they are a convenience, are not interfered with, only over valuation is prevented. In the next place where freight is insured net freight only is made recoverable. Next, where two separate policies cover the same subject matter, as in the instance above quoted from Benecke, the subject matter is to be deemed doubly insured, in other words, the insured person will only be able to recover it in case of loss under one of the policies. Lastly, "honour" policies, and policies effected abroad, are made subject to certain of the incidents of insurance law, viz., those of over



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insurance and double insurance, for the purpose of preventing the insured person, by adding "honour" policies to his valid insurances, from increasing the amount recoverable under his insurances beyond the real value of the thing at risk.

The indemnity clauses of the Bill contain provisions similar in part to provisions contained in the Maritime Contracts Bill, which was introduced by Sir S. Northcote in 1876. That Bill provided that in certain cases the valuation in a policy might be opened; that net freight only should be recoverable; and that expenses should not be insurable twice over in the manner above described.

As regards seaworthiness in policies, the Bill provides in effect that in policies by time there shall be a warranty that the ship shall leave her port of departure in a seaworthy condition, similar to the warranty now implied by law in a policy for a voyage; and that as regards all policies, whether voyage or time policies, where unseaworthiness arises after leaving the port of departure, the insured shall not be entitled to recover if the loss was due to unseaworthiness, and the unseaworthiness could have been prevented.

A clause of a somewhat similar kind formed part of the Maritime Contracts Bill of 1876, and is in accordance with the laws of most foreign countries.

A further clause (15) provides that in cases of unseaworthiness, and insurances made void by the Act, the premiums of insurance are not to be recoverable back.

Wages and provisions at a port of distress are by clause 16 made recoverable as a particular average loss under an insurance on ship. This will not prevent insurances "free from particular average;" it will only make them recoverable in the absence of an agreement to the contrary.

Clauses 17 and 18 contain stringent provisions making it obligatory on the insured person when a loss occurs to disclose all his insurances, including by the operation of clause 12 void policies. At present by the 19 Geo. II., c. 37, s. 6, the insured is bound to disclose his insurances, but no provisions exist for making the enactment effective.

Clause 19 provides stringent penalties for insuring by illegal or

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void insurances, the penalties being by a later section in the Act made recoverable as a debt due to the Crown.

Lastly, clause 20 provides that actions on insurances shall be tried without a jury, and be capable of being referred to the Admiralty Registrar assisted by merchants. This is for the purpose of providing an easy method in contested cases of dealing with questions as to the value of a ship or net freight; the Admiralty Registrar and merchants being a tribunal specially familiar with such questions.

CONTRACTS BETWEEN SHIPOWNERS AND SEAMEN.—Clause 21 provides that in the contract of service between a shipowner and his seamen there shall be implied an absolute undertaking that the ship is seaworthy when she starts. This is an extension of the present law as enacted by section 5 of the Merchant Shipping Act, 1876, which creates an obligation on the shipowners to use all reasonable means to ensure the seaworthiness of the ship.

The Bill also (clauses 22 to 26) extends the Employers Liability Act to seamen, who are at present excluded from its operation. The clauses in their form follow closely the sections of the Employers Liability Act with merely necessary alterations.

CONTRACTS FOR CARRIAGE OF GOODS AND PASSENGERS.—Clauses 27, 28, and 29 are designed to prevent shipowners from contracting themselves out of liability to shippers of cargo and to passengers for loss or damage due to unseaworthiness and *personal* negligence. Stipulations in bills of lading and other contracts of carriage exempting shipowners from these liabilities are made void, and insurances against these liabilities are made invalid.

The clauses do not prevent shipowners from contracting themselves out of or insuring against liability for the negligence of agents and servants.

As far as regards unseaworthiness these clauses are practically identical with clauses in the Maritime Contracts Bill of 1876.

Clause 30 provides that prepaid freight shall be recoverable back from the shipowner if freight is not earned. By our law, as it at present exists, prepaid freight is not recoverable back. This state of the law has been condemned by high judicial authority, and is contrary to the law of all foreign countries.

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PILOTAGE.—Clauses 31 and 32 propose the abolition of compulsory pilotage. This was recommended by the Select Committee which sat on the Pilotage Bill of 1870. With the abolition of compulsory pilotage the exemption which a shipowner at present enjoys from liability for loss or damage arising from negligent navigation in cases where the employment of a pilot is compulsory will cease.

A saving clause is introduced for the protection of the navigation of the Clyde and the Avon.

JOINT STOCK COMPANIES.—Clause 33 is designed to make the shareholders of single ship companies liable to such an amount as will, together with the assets of the Company, be sufficient to satisfy liabilities in cases of loss of or injury to life or property to the extent of the statutory limit of £15 or £8 per ton.

CRIMINAL LAW.—Clause 34 is designed to make unseaworthiness on leaving a port in the United Kingdom *primâ facie* a misdemeanour in the responsible owner of a ship.

At present section 4 of the Act of 1876 makes unseaworthiness a misdemeanour in the person who *sends* the ship to sea, or attempts to send her to sea.

The difficulty under the present law lies in proving who "sent" the ship to sea.

The present clause will shift the burden of proof, and where a ship is in fact unseaworthy, throw the burden on the owner of showing that the unseaworthiness was justifiable or excusable.

The clause reproduces exactly the provision of the temporary Act of 1875, which was altered for no apparent reason in 1876.

In order to prevent hardship on owners or part owners who take no part in the management of ships the clause is confined to the person responsible for the management of the vessel.

Clause 35 is intended to meet a case in which the Merchant Shipping Act of 1854 is defective.

By the 239th section of the Merchant Shipping Act of 1854 it is a misdemeanour for an officer or seaman to be guilty of acts endangering life on board his own ship, but there is no provision extending this provision to acts endangering life on board *other* ships.

An instance of this defect in the law may be taken from the case

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of the *Benin* and the *Duke of Buccleuch*. In that case the officer of the *Duke of Buccleuch* wantonly and recklessly ran down the *Benin*. If any one had been drowned he would have been guilty of manslaughter; but as no one was drowned he could not be prosecuted.

## PART III.—PROCEDURE FOR DETENTION OF UNSEAWORTHY SHIPS AND INQUIRIES INTO SHIPPING CASUALTIES.

The design of this part of the Act is, firstly, to alter the present law as to Government detention of unseaworthy vessels by securing to shipowners representation on the body which is to determine whether a ship ought to be detained; and, secondly, to alter the law as to inquiries into shipping casualties by forming local tribunals to hold them, in the composition of which tribunals the shipowners and certificated officers shall be represented.

At present the procedure for the detention of ships believed to be unseaworthy is regulated by the Merchant Shipping Act, 1876. Under this procedure where a ship is believed to be unsafe a provisional order for detention for purposes of survey is made by the Board of Trade officer. In the survey the master of the ship may select one of the persons to join in the survey. Upon the report of the survey a final order for detention may be made by the Board of Trade. The owner may appeal to the Court of Survey, consisting of a judge (in England the Wreck Commissioner) and two assessors, which court can order the vessel to be detained or released.

The procedure in inquiries into shipping casualties is regulated by the Merchant Shipping Acts. By these Acts the Board of Trade have power to order an inquiry into a casualty to be held before the Wreck Commissioner, or two justices, or a stipendiary magistrate. The Court of Inquiry reports to the Board of Trade, and where the conduct of certificated officers comes into question has power in certain cases to suspend and cancel certificates.

The following are the alterations in procedure effected by the present Bill:—

DETAINING OFFICERS, AND SHIPOWNERS' AND OFFICERS' REPRESENTATIVES.—Clauses 37 to 47 provide for the constitution under

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the Act of districts and for the election in each district of a representative of the shipowners of the district and a representative of the certificated officers of the district.

The shipowner's representative is to act with the Board of Trade detaining officer in cases of detention, and also to form one of the court to hold inquiries into casualties.

The officer's representative is to take part in inquiries only, not in detention cases.

DETENTION CASES.—Clauses 48 to 53 deal with the ordinary procedure for the detention in cases where ships are believed to be unseaworthy. The power of the Board of Trade to detain provisionally and finally is abolished, as is also the Court of Survey. The substituted procedure will be shortly this: The Board of Trade surveyor of the district will have power in cases in which he is of opinion that a ship is going to sea in an unsafe condition to serve a preliminary notice on the owner or master, specifying the grounds on which he thinks the ship unsafe, and where practicable, the things which ought to be done to make her safe. The preliminary notice may also be communicated to the crew. If the owner or master refuses to comply with the surveyor's requirements, the surveyor may apply to the shipowner's representative and the superior detaining officer to hear the case, or the owner or master may, if he disputes the requirements of the surveyor, apply himself to have the case determined. On application being made to them, the shipowner's representative and the superior detaining officer will have power to make an order for absolute or conditional detention, or for the withdrawal of the preliminary notice. If they differ no order for detention will be made, but in that case, if the superior detaining officer considers the condition of the ship dangerous, he will have power to serve on the master a further notice stating the grounds of his opinion, and where such a notice is served the crew will be relieved of all obligation to serve in the ship.

Clauses 54 and 55, taken in conjunction with clause 69, provide that an appeal shall lie at the instance of any one aggrieved (including the Board of Trade) from any decision of the shipowner's representative and the detaining officer to the Division of the High Court of Justice which exercises Admiralty jurisdiction, who will

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have power besides ordering detention or release to award damages where a detention has been wrongly ordered.

Clauses 56 to 60 contain miscellaneous provisions for giving effect to the altered system, and amongst other things provide that a copy of every notice shall be sent to the Board of Trade, and may be sent by them to Lloyd's and otherwise published. The right to bring an ordinary common law action for a detention is taken away, the power to award damages being given to what may be for convenience called the Admiralty Court.

The essence of the proposed new system is that there will hereafter be no detention by a Government officer alone. When a ship is detained it will hereafter in every case be either with the concurrence of the representative of the shipowners, or by order of the Admiralty Court. But the Government officer will have the power to warn both owner, master, and crew that the ship is unsafe; and in such cases the shipowner who disregards the warning, besides running the risk of losing his crew, will send his ship to sea at his peril.

Inquiries into Shipping Casualties.—Clauses 61 to 63 provide for the constitution of a Local Marine Court, consisting in each district of the shipowner's representative, the officer's representative, and the superior Board of Trade officer. This court will, in ordinary cases, hear inquiries into shipping casualties, the important cases alone being reserved to be dealt with by the Wreck Commissioner. The Local Marine Court will have the same powers and duties as to investigating and reporting as a Court of Inquiry has now; but it will have no power to cancel or suspend a certificate. Where a Local Marine Court reports an officer guilty of misconduct the Board of Trade will have power to have the alleged misconduct inquired into by the Local Marine Board, as is at present done in cases of misconduct.

Clauses 64 to 67 preserve the powers of the Wreck Commissioner in cases ordered to be dealt with by him, such cases being those only of magnitude and importance.

Clauses 68 and 69 provide for an appeal from any report or decision of a Local Marine Court or of the Wreck Commissioner to the Admiralty Court. As the law at present stands an appeal

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lies only at the instance of a certificated officer, a shipowner cannot appeal. The Bill gives a right of appeal to the shipowner and any person aggrieved.

Clause 70 provides for the transmission to the director of public prosecutions of any cases in which the Court of Inquiry is of opinion that criminal proceedings should be taken against any one in default, and it is made the duty of the director of public prosecutions in such cases to institute criminal proceedings.

## PART IV.—TONNAGE MEASUREMENT.

Clauses 73 to 77 deal with tonnage measurement.

The provisions concerning measurement of tonnage are intended to carry out the recommendations of the Royal Commission which reported in 1881.

These recommendations are in substantial accordance with the practice of the International Danube Commission, and with the arrangements concerning the Suez Canal which resulted from the International Conference at Constantinople in 1873.

These recommendations and the clauses of the present Bill which are founded on them retain unaltered the general principle of the system of measurement known as Moorsom's, under which the internal cubical capacity of the inclosed portion of the ship is measured and taken at the gross tonnage; and they also adopt the method of measuring that space introduced by Moorsom. But they correct certain errors which had crept into the English measurement from the faulty wording of some of the clauses of the Act of 1854; they define more carefully the deductions which have to be made from the "gross tonnage" in order to arrive at "net" or "register tonnage," and they supplement the Act of 1854 by language adapted to changes in the construction of ships.

The specific changes in the law may be summarised as follows:—

The erections above deck, such as skylights, &c., which do not form part of the body of the ship and which are not to be included in the measurement at all, are distinctly defined (clause 74).

The spaces to be deducted from the gross tonnage are also distinctly defined (clause 75). These are, generally speaking, the spaces used for the purpose of working, propelling, and navigating

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the ship, and not for the purpose of carrying cargo and passengers. They comprise in all ships (1) spaces set apart for the crew and master; (2) spaces set apart for chart-house, wheel-house, &c., in sailing ships "the sail room," in steamships the "engine-room and coal space," or the engine-room with an allowance for coal space. It is in the measurement of this space that the Bill makes the greatest change. According to the Act of 1854 this space is in ordinary cases a percentage of the gross tonnage, with a provision that in ships in which the engine-room is exceptionally large or exceptionally small the deduction shall consist of the actual space as measured, with a percentage of that space for coals. According to the Bill the deduction is to be either the space set apart for engine and boiler room, with an addition for coals of 75 per cent. of that space in screw steamers, and 50 per cent. in paddle steamers, or the space permanently set apart for engines and bunkers.

The whole deduction is never to exceed in screw steamers 33 per cent., in paddle steamers 50 per cent., of the gross tonnage, clause 75. No space is to be included in the deductions from gross tonnage which has not been included in the measurement of gross tonnage, clause 75. Penalties are imposed for using deducted portions for purposes of cargo, &c., clause 76. Provision is made for applying the present principle of measurement to the "floors" of modern iron vessels, clause 77.

PART V.

Provision is made for careful record in the official log of every casualty and for sending the full reports of all preliminary inquiries into wrecks and casualties to Lloyd's, clauses 78 to 83, which clauses have been inserted at the suggestion of Lloyd's.

The expenses incurred by the Government in relieving and sending home distressed seamen are thrown upon the ships to which they have belonged, or upon their wages, and, in default, upon the Mercantile Marine Fund, clause 87.

Clauses 88 to 92 give to Lloyd's the power of acquiring land for signal stations, similar to that possessed by the lighthouse boards of acquiring land for lighthouses.

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By clause 96 advance notes for not more than one month's wages are made valid.

By clauses 97 and 98 certain amendments are made in the Fishing Boats Act of last session in order to settle questions which have arisen in the administration of that Act.

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## GOVERNMENT COMMITTEE ON LOAD-LINE.

IN our number for January last we published the Board of Trade circular announcing the appointment of a Committee on the "load-line." The Committee is constituted as follows:—Sir E. J. Reed, K.C.B., M.P., *Cardiff*, and late Chief Constructor of the Navy, Chairman; Thomas Gray, Esq., one of the Assistant-Secretaries of the Board of Trade; Sir Digby Murray, Bart., the Professional Officer of the Marine Department; Thomas Sutherland, Esq., *London*, Chairman of the Peninsular and Oriental Steam Navigation Company; James Dunn, Esq., one of the Assistant-Constructors of the Navy; James Laing, Esq., of *Sunderland*, a Shipbuilder and Shipowner, and a Member of Lloyd's Register Committee; William Gray, Esq., of *West Hartlepool*, a Shipbuilder and Shipowner, and a Member of Lloyd's Register Committee; Benjamin Martell, Esq., *London*, Surveyor of Ships, the Chief Surveyor of Lloyd's Register Committee; Francis Elgar, Esq., *London*, a Naval and Consulting Architect, and Professor of the Chair of Naval Architecture in Mrs. John Elder's College, Glasgow; Wm. Denny, Esq., of *Dumbarton*, a Shipbuilder and Naval Architect; Thos. B. Royden, Esq., of *Liverpool*, a Shipowner and Shipbuilder, and a Member of the Committee of the Liverpool Classification Society; James Price, Esq., *Liverpool*, Master Mariner, and the Marine Superintendent of the "Guion" Line; Robert Duncan, Esq., *Port Glasgow*, a Shipbuilder and Shipowner, and a representative of Owners of "Cargo Carrying" Steamers.

The complaint loudly made against this Committee by the shipowners (and until lately by the *Shipping Gazette*) is, that it does

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not contain enuogh members to represent the interests of "managing owners" of cargo-carrying ships.

It is not easy to understand what managing owners of cargo-carrying ships, as a class distinguished from other shipowners, would deem to be an adequate representation. It seem to us that if there be any interests not adequately represented on this Committee by "class" members, those classes are the seamen and the public; whilst the underwriting interest is not represented at all, and the sailing ship interest is represented only, and that indirectly, by two members. Let us see how this allegation, that the interests of "cargo" steamers have been disregarded in forming the Committee, turns out on examination. First of all, there is the chairman, Sir E. J. Reed, K.C.B., M.P., who represents Cardiff in Parliament. The electors of Cardiff are certainly men much interested in cargo-carrying ships, indeed more so than in any other class of ships. Sir E. J. Reed is interested in the interests of the electors of Cardiff. We do not for a moment assume or think that the chairman will be biassed in their interests. It were absurd from what every one knows of his career to think so. On the other hand, it is not possible in the nature of things, nor probable in the nature of things Parliamentary, that the member for Cardiff should ignore the interests of Cardiff shipowners. We mention this because those who have been clamouring against the constitution of the Committee on the ground we have named, overlook the important fact that the Cardiff shipowners are represented in the Committee above all the shipowners in the kingdom. Their representation has the post of honour. The other representations of cargo-carrying ships are Messrs. Laing, W. Gray, T. B. Royden, and Robert Duncan, and to a very great extent the representation of Lloyd's Register Committee. That Committee, if it represents any "class" of shipowners beyond another, represents the class whose ships carry cargoes, and their representative represents their Committee. So that out of the thirteen members of which the Committee is composed there are really not less than six who, whatever else they may represent, certainly represent places or persons interested in the main in cargo-carrying ships. The "practical" element is numerically weak, and is represented by Captain

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Sir D. Murray, Bart., of the Board of Trade, and Captain James Price, of the "Guion" line. The "technical" element musters in splendid force in the persons of "Professor" Elgar, Mr. Martell, Mr. Dunn, Mr. William Gray, Mr. Royden, Mr. Laing, Mr. Denny, Mr. Robert Duncan, and last, yet foremost, Sir E. J. Reed. Whilst the interests of those shipowners who especially practice "light" loading are represented in the person of Mr. Thomas Sutherland alone, and the only representative of the Board of Trade is Mr. Thomas Gray. It was probably outside the intention of the President of the Board of Trade to consider any class or classes of shipowners in selecting the members of the Committee. What is needed on the Committee is knowledge and experience. Those gentlemen whose names as public men have been prominently before the public recently are therefore necessarily found upon it. Sir E. J. Reed, late Chief Constructor of the Navy, a designer of many ships, and once chief of a very large shipbuilding establishment at Hull; "Professor" Elgar, whose connections with the *Daphne* investigation is well known; Mr. Benjamin Martell, the author of several papers and several well-known tables of freeboard; Mr. James Laing, President of the Chamber of Shipping; Sir D. Murray, Bart., the author of the so-called "Board of Trade Tables," and Mr. William Denny, whose experiments on matters connected with ships are not so well known as they ought to be; and Mr. Thomas Sutherland, chairman of the most important shipping company in the world. These gentlemen hold and command a high position on all matters appertaining to the loading of ships, and with the assistance of other members of the Committee will with certainty propound something useful, even though they fail to discover a universal load-line.

A very striking point in the formation of this Committee is that while there are on it three members of Lloyd's Register (Mr. Martell, Mr. W. Gray, and Mr. Laing), the President of the Board of Trade has altogether gone away from his own technical staff. There are those persons who are ill-natured enough to say that this proceeding of Mr. Chamberlain discovers a want of confidence in the technical staff particularly, and in the Marine Department generally. Indeed, the names of successors to some of the per-

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manent officials have already been whispered. We attach no significance to these rumours. The way in which Mr. Chamberlain spoke of the technical officers in his able speech at Newcastle shows that whatever his reasons may have been for not putting them on this Committee, it is not because they are unfit, for his opinion of their ability and trustworthiness and loyalty is unshaken and outspoken.

It is early as yet to speculate on the probable result of the deliberations of this Committee; but whatever the result may be, Mr. Chamberlain has, we think wisely, considerately, and even kindly, by his very action in appointing it, removed very heavy responsibilities from his own officers. The shipowners' organs in the press have never yet been able to discover that anything the Board and its officers have done or can do is right (even this Committee is, as we have pointed out, in their opinion wrongly constituted); this being so, Mr. Chamberlain has, besides acting considerately to his own technical staff, given the shipowners' representatives an opportunity of doing what is right in legislating for themselves in this most important matter. Those who have been critics heretofore, and certainly adverse critics, can now by the action of their representatives turn legislators, and disarm criticism. If they fail in this we can only hope that those gentlemen who may hereafter become critics in their turn, will be reasonable and lenient. There are two dangers to be avoided by this Committee. The first is the danger of interfering with legitimate "gain" by making vexatious rules. The second is the danger of considering the interests of "gain" first, and the safety of life secondarily. It is possible to frame rules which will meet with universal acceptance by owners of cargo-carrying steamers; but if those rules should not really and substantially and obviously conduce to safety, whilst they would completely exonerate the owner from blame; the fact that they may meet with such acceptance will not be all sufficient. It is true such rules might settle the load-line question for a time; it is true they might relieve the Board's staff and the owner from all responsibility; but as life would continue to be lost as freely as ever, those advantages would not,

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from a public point of view, be an unmixed good. The load-line Committee is in Mr. Chamberlain's opinion (or he would not have appointed it) fully competent to steer clear of both evils we have just indicated; and that is why we look forward with entire confidence and high hopes to the end of its labours. It will be very interesting to note amongst other things, whether the labours of the Committee, so largely composed as it is of representatives of the shipping interest, will result in the formation of a new or extended Government department, or in the appointment of additional members of the Staff, and in either case, in an increased charge on the pocket of the taxpayer. It has not been an occurrence unknown, that agitation commenced by a trade against Government officers and Government action has in the end led to such results. Whatever the result in these respects may be they are of minor importance so long as the one great object of saving the seaman's life is effected; without decrease of "gain," if possible.

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## WEATHER AND WRECKS OF 1883.

THE number of shipwrecks may usually be taken as a very fair index of the weather, for there is no factor which enters so largely into marine casualties as a heavy gale. There are of course varying circumstances under which the character of one gale may be more destructive than another of even greater violence, the warning may be more pronounced in one case than in another, or the development of the storm may be much more sudden. Doubtless numerous casualties are due to the latter cause, for it is only of too common occurrence to disregard the most self-evident indications of an impending disturbance, unless such indications are accompanied by an increase of wind; it should, however, be obvious with such signs as a rapidly falling barometer and a clouding in of the sky, even though the wind remains almost calm, that a storm is likely to blow; and the very fact that the wind remains quiet should be an additional reason for taking every precaution, since a sudden

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outburst is almost sure to follow. The type of gale here referred to cannot be better illustrated than by a brief allusion to the memorable gale of October 13-14, 1881. The chief force of this gale and the most disastrous effects were experienced in the German Ocean, the peculiarity of the storm was that the front half of the disturbance was not accompanied by wind of gale force although the barometer fell below 28·5 inches, but immediately that the lowest barometer had passed the storm broke out in full fury, and the rear of the disturbance was marked by exceptional violence and peculiarly severe squalls ; it will be remembered that 200 lives were lost off the coast of Berwickshire. There is also another type of gale which is especially destructive in the vicinity of the British islands, more particularly from the persistency with which it blows, the type of gale here referred to is similar to that of January 18th, 1881. The principal feature of such a storm is that the disturbance, although it may arrive on our shores from the Atlantic, with a fairly rapid rate of progress, is yet suddenly arrested by the existence of an area of high barometer readings over western Europe, and is held in check until some change takes place in the existing conditions. Gales of this description are particularly destructive on our eastern coasts, since the contiguous area of high pressure to the eastward of the storm-centre forms a most ready supply of air for a violent southerly and easterly wind :—it is with these gales in particular that we have such heavy falls of rain or snow.

The gales of 1883 when within the area of the British Islands were not generally of a very dangerous character, and to this fact may probably be attributed the smaller number (522) of wrecks which occurred off the coasts of the United Kingdom ; but the nature of the gales in our Islands is no guide whatever to their character over the Atlantic, even although only a few hundred miles from our shores. It is a fact quite commonly observed that we in England frequently enjoy an almost complete immunity from storms, while in the Atlantic they may be unusually prolific. A better illustration of such conditions cannot well be found than the weather experienced in the autumn which has just passed ; for whilst we were peculiarly free from storms, with only one or two marked exceptions, yet the Atlantic on the other



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hand was very stormy; but for some reasons which it must be confessed are not at present well understood, the storms, though apparently travelling direct for our shores have, when approaching us, taken a more northerly route, and their western edges have merely skirted our Islands. When we consider that the number of vessels on the North Atlantic is very much greater than in any other ocean, possibly the storms which have there been so common, may to some extent explain the high total number (2,000) of wrecks reported in 1883.

January was characterised by frequent gales on our coasts, the direction being for the most part south-westerly; these gales followed each other in very rapid succession, and were especially severe in the latter part of the month; there were, however, only 57 wrecks on the coasts of the United Kingdom from January 1st to 27th. The North Atlantic was more disturbed than the area over our Islands, and the shipping notices would seem to show that the month was more stormy than any preceding month of the winter.

February was also a stormy month, south-westerly gales occurring very frequently under the influence of storm-centres, travelling from the westward, but which for the most part only skirted our Islands. Some severe gales were, however, experienced, and as the result there were 107 vessels wrecked on the coasts of the United Kingdom during the month; this number is slightly in excess of the total in the same month for both 1881 and 1882, and is rather more than one-fifth of the total losses in the year. The early and middle parts of the month were very stormy in the North Atlantic, but quieter weather than that experienced of late was enjoyed in the latter part of the month.

March was generally very quiet, the winds were chiefly northerly and easterly, which resulted in excessively cold and dry weather, and which proved of considerable advantage to the agricultural interests; very few gales were experienced—one of exceptional violence, however, occurred on the 6th, which occasioned the loss of about 382 lives on our east coast. This depression was travelling in a south-easterly direction across Scandinavia, but the chief strength of the gale was due to the barometer being high in the west of our

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Islands, so that a good supply of air was close at hand to feed the heavy northerly wind. In all, sixty-six vessels were wrecked during the month on the coasts of the United Kingdom. Very quiet weather was generally experienced in the North Atlantic.

April opened with an anti-cyclone situated west over the British Islands, and these conditions held generally until the middle of the month, consequently the winds were very slight. In the latter part of the month only about two gales occurred, so that the number of wrecks was small, only twenty-five vessels being lost during the month (four weeks ending April 30th). A heavy gale was experienced between the 3rd and 5th on the western side of the Atlantic, but with this exception little of importance occurred.

May was very quiet, the winds were easterly during the first part of the month and westerly during the latter part, the force scarcely reached that of a fresh gale throughout. Only eighteen vessels were wrecked on the coast of the United Kingdom during five weeks ending June 2. In the North Atlantic the weather was also generally quiet.

June was similarly quiet, and the winds very variable, only nine vessels were lost on the coast of the United Kingdom during the month.

July was also quiet both in the British Islands and over the North Atlantic, the number of wrecks was, however, more than double that for June. The direction of the wind was for the most part westerly, and cold, wet weather was generally experienced over the United Kingdom, which caused considerable anxiety with respect to the harvest, but the finer weather which fortunately characterised the latter part of the summer proved very beneficial, and secured a harvest certainly somewhat above the average of that in recent years.

August was rather more windy; a strong gale blew on the 8th and 9th, which increased the number of wrecks but without exception all the storm centres which arrived on our coasts from the Atlantic passed either over Scotland or altogether to the north of our Islands. In the Atlantic, the weather was more stormy for some time previous, several very heavy gales occurring towards the end of the month.



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September was very stormy, and the barometer throughout the month was in a very disturbed condition. Several storm-centres came in from the Atlantic and passed completely over our Islands, and for the most part over England. The most severe gale occurred quite at the commencement of the month, its centre was within a very short distance of our south-western coasts on the morning of September 1st, and subsequently passed over England and into the German Ocean; the chief force of this gale, so far as the British islands are concerned, was felt in the south and south-west of England on September 1-3. The storm has been tracked, in a paper read before the Royal Meteorological Society, right across the Atlantic. The first evidence of its existence was in lat. 21° N. and long. 58° W., on August 24th; it then passed to the west of Bermuda, and on August 29th coalesced with another storm-centre which had been travelling south-eastwards, and which was traceable somewhat to the east of the Rocky Mountains on August 27th; the merging of these two storm-centres added materially to the area and violence of the disturbance which skirted Nova Scotia, and passed over the south-eastern part of Newfoundland on August 30th, crossing the Atlantic in a direction almost due east at the rate of about 40 miles an hour. We have here unmistakable proof of a West Indian hurricane travelling across the Atlantic to the British Islands, it having maintained its character as a severe gale from August 24th when in the tropics, to the time it passed away from our shores into the German Ocean on September 3rd. Many vessels experienced this gale in the North Atlantic, and the shipping notices show that several were abandoned owing to the damage they had sustained. Twenty-two vessels went down on the coasts of the United Kingdom during the week ending September 8th, nearly all being doubtless due to this gale: this number is the same as that for the whole month of September, 1882, and slightly in excess of the number in September, 1881. September was evidently fairly stormy in the North Atlantic.

October commenced with very settled conditions, and indeed, the whole of the month was unusually quiet. The only gales of importance occurred on the 16th to 18th, and 24th to 25th, the total

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number of wrecks on the coasts of the United Kingdom during four weeks was only 23. October is usually an exceptionally stormy month. In October, 1880, a very severe storm was experienced on the 27th to 29th, over fifty vessels were driven ashore on the Lincolnshire coast during the night of the 28th to 29th, and at Lloyd's as many as one hundred and thirty losses were posted in one day. The gale of October 13th to 14th has been already alluded to, but an additional idea of the destructive nature of this storm may be gathered from the fact that at Greenwich the pressure of the wind amounted to 53 lbs. on the square foot, and at Liverpool it was reported to have reached 77 lbs. on the square foot. In one day as many as 108 vessels were posted on the Wreck and Casualty Book at Lloyd's. On October 24th, 1882, one of the heaviest gales of the whole winter was experienced, but without these instances, October has well earned for itself the character of a stormy month, so that we may have a feeling of satisfaction at the thought of its having passed away so quietly in 1883.

November also was much quieter than usual. Several storm-centres reached our shores from the Atlantic, but for the most part they passed well to the northward—no severe gales were experienced, the number of wrecks on the British coasts was consequently small. Very heavy weather was however experienced in the North Atlantic, especially in the middle of the month.

December was generally very quiet in our Islands, although several depressions passed on a northerly track to the westward of us—their outer edges merely skirting our western coasts. A very violent gale, however, passed over the north of England on the night of 11th to 12th, its violence may be gathered from the fact that 53 vessels went down off the coasts of the United Kingdom during the week ending December 15th. It would appear that this storm was scarcely felt out in the Atlantic—probably this was due to its northerly route, being out of the usual track of vessels—a very severe gale was however experienced in the Atlantic between the 15th and 17th, but it did not reach our coasts. December on the whole was stormy in the North Atlantic.

The mere fact that loss of life, to say nothing of the loss of

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property, depends so largely upon the occurrence of storms, and the certainty that we are powerless to prevent their occurrence, should be a sufficient reason that those whose lives are imperilled, should as far as possible make themselves familiar with the laws which govern these storms, so that they may take advantage of every possible means to avoid the points of danger.

C. H.

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## LOSS OF LIFE AT SEA.

MR. CHAMBERLAIN is continuing his crusade against bad ships, bad shipowners and over insurance with unabated vigour. Here is an extract from a recent speech of his at Birmingham, which ought to be made as public as possible.

"But there is another subject which to me is one of much greater and even of vital importance. I want to do something to provide for the greater security of life at sea. (Loud cheering.) This is the first time that I have spoken upon this subject to any audience which has not consisted almost entirely of persons directly interested in the trade with which I have to deal. But I think the time has come when I should appeal to you, my constituents, and through you to the constituencies of the United Kingdom, to give me their support and their goodwill in the efforts which I shall make to put an end to the great scandal—the great evil—which we must all deplore. (Cheers.) I feel sure of the sympathy for which I plead. It is impossible that you should not feel for the brave men engaged in a disagreeable, a laborious, and a perilous calling, who carry the British flag honourably to every quarter of the globe. (Cheers.) The position, the security, the wealth, and the resources, if not the very existence, of the country depend upon our maritime supremacy, and those who maintain that supremacy are entitled to our consideration and to our gratitude. We are bound to do all in our power to remove every preventable cause of risk in connexion with the dangerous profession to which they belong. These dangers are best shown by

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figures which I have quoted more than once but whose silent eloquence no words can surpass. In a single year 3,500 sailors met with their death by drowning in British ships alone. That is altogether exclusive of the deaths of passengers, of the deaths of men employed in ships of war, of the deaths of those who are employed in colonial vessels, or of the fishermen around our coasts. I speak of the sailors of the British Mercantile Marine. Men and officers, there are 1 in every 60 who met their death by drowning in the course of 12 months alone. And even that does not represent the appalling nature of the facts with which we have to deal. There are great lines of steamships, great passenger steamers, even many of our best sailing ships, to which a casualty hardly ever occurs, in connection with which a death hardly ever takes place, and if we were to eliminate them from our calculation and consider these deaths as taking place almost entirely in a much more limited number of vessels, I believe that you would find that the proportion would have been, not 1 in 60, but 1 in 50, or even 1 in 40 of the men employed. (Shame.) There are some ship-owners who tell us that the British seaman has deteriorated. I do not know why that should be true. No other class of British working men has deteriorated. They are rising in the scale, improving every day in intelligence, in education, in thrift, and in sobriety. (Loud cheers.) If the sailor has become more degraded—I do not say he has—I say, 'What wonder, when these are the conditions of the life he has to live, when he goes to sea as a man would go to a forlorn hope, and with scarcely a reasonable prospect of his safe return.' (Hear, hear.) I have come to the deliberate conclusion that much of this loss of life is due to preventable causes. (Hear, hear.) I have consulted every authority that could give me any reliable information on the subject, and every impartial authority is of the same opinion—the opinion which I have expressed to you. (Hear, hear.) Only this morning I received an account of a business meeting, a meeting of the shareholders in one of the great underwriting concerns of Liverpool. It is the meeting of the British and Foreign Marine Insurance Company, and underwriters, you will remember, have the best opportunities for judging of the cause of these disasters in which they have so

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great an interest. (Hear, hear.) Now, the chairman of the company, addressing his shareholders, said this—'After everything has been said we must still feel that this immense loss of life at sea is a thing which calls for the most serious attention of every person interested in shipping matters and of the nation as a whole. I have not the slightest doubt myself—and it is an opinion I believe very largely shared in—that a large number of these lives might be saved, and that such a great loss might to a very great degree be prevented.' Now I do not bring any accusation against any one. I accuse the law which directly fosters neglect and want of precaution; and I say, holding the position which I do, that heavy responsibility rests upon me, in my official capacity, to do all that is possible by legislation, to secure the lives of our sailors, and to acquaint the Houses of Parliament with the facts which have come to my knowledge and to submit to them the methods by which, in my opinion, a great part of these losses might be prevented. I might give you, if time permitted, a great number of illustrations of the terrible state of things which prevail, but I will give you one, a simple story of the sea, not told in sensational language, but as it fell from the lips of the witnesses examined on oath in the courts of law in the kingdom. There was a vessel, a fine vessel, some 2,000 tons gross burden, which was owned by a man who had no knowledge of shipping, who was, I believe, a builder and land agent, and who had made money, and thought that he could make more by investing it in ships. He was at liberty to speculate as he pleased, providing that the counters were not human lives. This ship, according to the builder's account, ought to have had a freeboard of 5 ft. 6 in. That means that the upper-deck of the ship ought to have been 5 ft. 6 in. out of the water when she was fully loaded. Other authorities said that that was not enough, and that she ought to have had 7 ft. But this owner, who knew nothing about shipping, who wanted to make money, sent her to sea on her first voyage, with a freeboard of 4 ft. 9 in. She had a fine voyage; there was no heavy weather, but she behaved so badly, that when the crew came home they left her, and refused to sail in her any more. What did the owner do? He gave her the next voyage a freeboard of 4 ft. 3 in. On

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the second and third voyages she had again fine weather. She behaved badly both times. Both times the crew refused again to sail with her; and on the last voyage which she ever went this owner sent her out to sea so loaded that her freeboard, which ought to be 5 ft. 6 in. according to some, or 7 ft. according to others, was only 3 ft. 9 in., while her crew, which ought to have been 29 or 30 hands, was reduced by him to 25 hands. So overladen and undermanned, she foundered in the first gale she encountered; every man on board was drowned, and their widows and families remained without redress unless from Heaven—(cheers)—for the wickedness of which they had been the victims. The captain of that boat, before he sailed on his last voyage, wrote a letter to his father. He said:—'If I come back from this voyage, I will never sail in this ship again. Why should my wife be made a widow so that another man may handle a little coin? Don't tell her, don't tell my mother anything about this; it might make them uneasy.' I might tell you many other cases. Do you not think there was something in what the late Chief Justice Earle said on one occasion when a man was on trial before him, and he charged the jury:—'Gentlemen, is not this one of those instances in which a ship has been built, and equipped, and manned, and loaded with an intention of sending her direct to her destination at the bottom of the sea?' (Loud cheers.) Just think about it. Whenever there is such a gale as that which blew around our houses and shook our windows and doors last week, you know that the next day in the paper you will read about the great loss of life, and the black book at Lloyd's will be filled with the names of ships that have gone to the bottom of the sea, of which no more will be heard, while hundreds of men whose names are unknown, except to those whom their deaths will make desolate, will have gone to the bottom of the sea with the ships in which they have sailed. Well, in the meantime—and this, perhaps, is the most dreadful particular part of it—it may happen that in even a majority of the cases in which these disasters have occurred the owners themselves will have made a profit out of the catastrophe. (Shame.) When I was at Newcastle the other day the shipowners told me that that was altogether uncommon. It is not uncommon. I say delib-

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erately—speaking with a due sense of responsibility—that it is the commonest thing in the world: that I have overwhelming proof that in a great number of cases the loss of a ship is an actual source of profit to the owners of the ship. (Shame.) Why even in Newcastle I had an illustration of this. In the short time I stayed there I met a gentleman who said, 'A few days ago I was speaking to the manager of a large steamship company, and I asked him what sort of a season he had had, and his reply was "We have been very unfortunate; we have had no losses."' (Shame.) There are cases again and again happening in which a ship having been lost, the shareholders in the vessel have received back the whole of the capital and a bonus profit on the disaster. I say that that is a scandal. (Loud cheers.) It is, I say, a scandal to the British law; it is a scandal to the great industry of which, but for this ~~stain~~ upon it, we should all be so proud; with the help of God and of every honest man—(loud cheers)—we will do something in the next session of Parliament to put a stop to it. (Cheers.) In doing this righteous work, necessary for the saving of life, called for in the interests of common humanity, you will be protecting the interests of property also. This loss of life is attended by loss of property. Last year or the year before—every year, in fact—nearly 400,000 tons of shipping go to the bottom of the sea. What is the value of all this immense property, of the cargoes, of the ships, of the equipments, of the stores? No man can estimate. No man will put it at from less than 10 or 15 millions which go to the bottom of the sea, which is also whitened with the bones of the brave men who perish in these ships. This is a loss to the capital of the country—the capital which might be employed in productive industry; and it is a loss which can ill be spared. Therefore, I say to you, upon all grounds, upon grounds of duty, upon grounds of morality, as well as upon grounds of interest, let every man, without distinction of party, assist me against even the great and powerful interests which are involved in the maintenance of the existing system, and enable me to put a stop to a state of things which is discreditable and deplorable and which ought not to be endured." (Loud cheers.)

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## CORRESPONDENCE.

### OFFICIAL PORT CUT IN BULWARKS OF WELL-DECK STEAMERS.

*To the Editor of the "Nautical Magazine."*

Sir,—In reference to the load-line question a great deal has been said about the danger to life and limb to the crew on the main-deck of "well-decked" ships when overloaded. The Board of Trade say that all ships should have sufficient clear side to avoid any heavy water coming on board to the danger of *life and limb*. Now, latterly, the Board of Trade officials seem to be doing the very thing to make it impossible to keep heavy water off the main-deck of a "well-deck" ship, and they cut away the main-bulwark some 6 ft. × 2 ft. to allow the heavy water to escape. But the heavy force of water now rushes in through those great ugly open spaces, tearing everything before it, endangering the combings of the main-hatch, steam pipes and bridge ladder; and for that the Board of Trade advisers allow a ship to load deeper in the water by an extra *two inches*. It hardly requires a seaman to see the absurdity of this new experiment. It, in my opinion, makes a ship more unseaworthy than before.

Port Said, January 31st, 1884. SEAMAN.

[We advise our correspondent to address a letter to Mr. Wm. Gray, of West Hartlepool, who is a member of Mr. Chamberlain's Load-line Committee. We are informed that Mr. Withy and other authorities are in favour of these open ports.—Ed. *N. M.*]

### NAVIGATION OF SOUTH AFRICAN COAST.

*To the Editor of the "Nautical Magazine."*

Sir,—Mr. Hepworth's paper in your last month's issue will doubtless be of use to strangers going to the South African coast; but I think he might have taken a *little* more trouble, and greatly increased the value of his remarks. It is now two years since the Meteorological Office published a most valuable and exhaustive set of wind and current charts for the South African district, and

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had Mr. Hepworth consulted these he would have found that the N.W. by W. current between Cape Agulhas and Cape of Good Hope is a strongly marked one, and more marked as the distance from land is increased. It is found here nearly all the year round more or less, being slightly stronger in summer. Its greatest strength *along the shore* is between December and March. From May to July there is little or none, whilst in August a counter-current will be experienced, as stated further on, but *off shore* it is always found. It is thus spoken of in the work alluded to :—

"It replaces the surface water that is drifted from the West Coast of South Africa by the S.E. trades of the Atlantic. This drift is greatest during the summer months, at which time the Trades begin to be felt, even in the neighbourhood of the Cape; and the surface water that is then carried away is, in part, supplied by colder water from below. It has happened in the summer time that a ship in Table Bay has recorded a sea surface temperature of only 51°, after experiencing one of 78° in nearly the same latitude in the Agulhas current to the east of the African continent."

This latter fact is well known to anyone who has indulged in morning swims about the Cape Town wharves. Your correspondent seems to think that this north-westerly current is the Agulhas current continuing its course round the Cape towards the Atlantic. But the differences of temperature show that this is not the case; off the pitch of the Cape of Good Hope these differences are most marked, especially during the summer months. These charts also prove the fact (recorded on the Admiralty chart) of an occasional E.S.E. current between Hangklip and Agulhas. This is well-defined. In August (as much as 35 miles having been observed in 24 hours) when the mean temperature of the surface there is 60°, whilst off the Kowie it is 68°. The yearly mean difference of temperature between these places is 10°. The Agulhas current (as the charts most graphically show) only *coasts along to*, about, the Kowie; after which it swerves to the south, and skirts the southern edge of the Agulhas bank, leaving an incurving back drift to the northward and westward between Algoa Bay and Mossel Bay. This will account for the strong set in towards shore which Mr. Hepworth has experienced between Cape St. Blaize and St. Francis. From

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November to January, however, the Agulhas current will be found along the shore as far as St. Francis, though weak. From March to July a strong counter current (*i.e.*, easterly) sets in, which disappears in August, between which month and October little or no current will be found about there. That is between Kowie and St. Francis. Any westerly current found beyond Algoa Bay to the westward can only be occasional and irregular.

A current of irregular strength is also shown, setting in *towards* the land between Mossel Bay and Agulhas, during the summer principally, of which I have myself had experience.

Eastward of the Kowie, as is well known, the Agulhas current a few miles off shore is very strong, and sometimes attains a startling velocity. It can only be escaped by keeping close in; but even along shore some will be found. In regard to the steamer alluded to, which touched near Recif, after having seen Bird Island light, Mr. Hepworth is evidently unaware of the facts of the case.

As to winds, these are not of *great* consequence to steamers. But it may be remarked that the Table Bay south-easter is often, and, I am inclined to think, nearly always, a local wind; after the manner of the south-westers in Valparaiso Bay, and the north-westers in Algoa Bay. Many times one gets an offing and finds a calm.

It will also be useful to a stranger, when riding out a south-easter in Algoa Bay, to know that as soon as the gale is coming to an end the glass will *fall*.

Beyond this little is to be said regarding winds except that the summer months are fine, with few winds reaching the force of a gale; and that, of course, the winter is the worst. About the East London district statistics would seem to show that the equinoxes are the worst periods for gales. Generally speaking the prevailing coast wind in summer is from the eastward, in winter from the westward, following the coast line to a great extent.

As to the local attraction supposed to exist between Table Bay and Cape Point, I much doubt anything of the kind, and have never been able to *decide* any difference between results obtained from observations here and further along the coast. *But*, without doubt, an outward bound steamer and especially a stranger, with, perhaps

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compasses adjusted for the northern hemisphere, and bound direct for one of the eastern ports, requires to exercise great caution when he alters his course to the eastward, on rounding Cape Point (after having been so long on a southerly course), for reasons which will be clear to anyone who has studied magnetism and compass deviation.

In describing landmarks between Algoa Bay and Natal, I am surprised that Mr. Hepworth has missed False Island, 15 miles west of the Kowie, which from the westward appears like a small islet, and from the eastward resolves itself into a low neck of sand, with a fairly bold end to it.

Also the remarkable sandhill noted in the Admiralty charts on the north side of Mazeppa Point, which really *is* very remarkable, rising abruptly from the water in a double hillock, lightly crowned at the top with scrub.

In conclusion, I trust that we shall soon be able to enter East London and Natal harbours; and that the dangerous part of the Cape Coast between Hangklip and Cape Agulhas may soon be made safe by a good light on Dyer Island, protecting ships from both the Birkenhead Rock and the rocks off Quoin Point; say such a light as the Longships is now, which would answer every purpose. Talking of lights, a stranger to the coast should know that at times the refraction is very great. I have more than once seen Recif and St. Francis Lights at the same time. I have seen Robben Island Light 10 miles beyond its range, and a steamer's masthead light fully 13 miles distant. These facts sound incredible. I have also, from the same cause, seen the ships in Table Bay reflected in the air upside down.

Liverpool, February 12th, 1884. W. B. WHALL.

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## DEFECTIVE RIVETING AND SEA CASUALTIES.

*To the Editor of the "Nautical Magazine."*

Dear Sir,—On reading the article in your January number on "Merchant Shipping Legislation," it struck me that there is one probable cause of ships disappearing suddenly which never seems to be taken note of. Any one visiting the shipbuilding yard and walking

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round the scaffolding of a ship in course of construction when the plates are only partly riveted on; if they examine the rivet holes in the outside plates, will find that they are not in one with many of the angle iron holes, and where the plates are double or overlap, the middle one half overlaps the holes on each side. It is quite plain that the full strength of the rivet cannot be obtained without drilling one of the plates afresh, which I venture to assert is seldom if ever done; even then it would be a source of weakness, as the hole in one plate would be much larger than the corresponding one. A red hot rivet is forced into the half-blind holes, and when clinched looks sound and solid, and will stand the test of a surveyor's hammer. But let several of these weak rivets be close together, as they often are, and an unusual strain be thrown upon that part of a ship in a gale of wind. The weak rivets give way; the ship founders with all hands. An inquiry is perhaps held, and every one is puzzled to account for the loss. The ship was built to the highest class at Lloyd's under the inspection of Lloyd's and Board of Trade surveyors, was well manned and equipped; there is no evidence to show that she was overloaded, and there it ends, buried like the bad work of a doctor.

If the visitor pays a visit to the punching machines he would see that the plates and angle irons are marked, and would suppose them to be correctly marked. There is enough carelessness displayed in the punching to account for the holes not being in line.

As the punch ascends or descends the plate or angle iron is moved along by careless workmen; sometimes the hole is on one side of the mark, sometimes on the other side, and sometimes in the right place. I do not know whether the Board of Trade and Lloyd's surveyors have instructions to look after this department; but I know that in many cases it is not properly looked after. It is not much use for a man who is appointed to command a ship to interfere, he would be laughed at, perhaps get himself into trouble.

It is only the surveyors, armed with some authority, who can interfere effectually. If they were to condemn plates occasionally where the holes are not correctly punched, the builders, for economy's sake, would see that their foremen and workmen

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exercised more care, and I am convinced there would be fewer unaccountable losses than there are now.—I am, Sir, yours,

A STEAMSHIP MASTER.

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## THE POLE COMPASS.

*To the Editor of the "Nautical Magazine."*

DEAR SIR,—In your November number of 1883, I read an article on the Pole Compass, by "E. B.," which is rather calculated to excite the indignation of masters of freight steamers in general. Any outsider reading the article in question would conclude that they were all ignoramuses. There may be a few who are so ignorant as to think that a pole compass is entirely clear of the ship's magnetic influence. I have never met with any so ignorant. And I believe they are few and far between to warrant the assertion that "E. B." makes, when he says that the pole compass is supposed to be beyond the influence of beams, masts, and funnel, &c., &c.

At the time referred to, when the *Great Britain* was on shore, such a degree of ignorance as to the laws of magnetism may have existed among seamen; but not at the present time, when most of the carrying trade is done in iron ships; and magnetism has been so thoroughly investigated by scientific men, and the laws of magnetism so plainly taught that any navigator who has brains enough to pass a master's examination, will realise the fact that there is no spot on board of an iron ship where a compass is clear of all attractive influence. I admit there is a spot of least attraction, but in practice this spot is generally unavailable owing to fittings, such as hatches, masts, booms, &c. Any inexperienced person reading the paper by "E. B." would be led to believe that the whole of the losses owing to bad courses were to be attributed to the ship being fitted with a pole compass, which "E. B." calls a make believe. He also refers to the case of a new steamer making all her courses good as per deviation card until rounding Ceylon. Now this is very hard for a practical man to believe, unless the standard compass of the ship in question was entirely out of the reach of the ship's magnetic influence; for it is one of the laws of magnetism, which like the rest of Nature's

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laws never err, that the effect of the ship's magnetism induced in vertical iron changes with a change of latitude; and any compass on board a steamer must be more or less under the influence of vertical iron, such as masts, funnel, &c.

And I venture to assert that, with very few exceptions, all masters of freight steamers are familiar with the fact that the principal source of error is that arising from the effect of vertical iron.

I may be out of place in trying to explain one of the laws of magnetism here, as most of your readers will be more familiar with the subject than myself. But I wish through the medium of your valuable journal to vindicate the professional character of masters of cargo steamers, and to say a word in favour of the undeservedly-abused pole compass. I should be rather reluctant to take command of a new iron ship that was not fitted with a pole, unless the standard was much more than five feet from the deck, as my experience has taught me that the deviation of a compass placed so low is very irregular and continually varying. There are exceptions perhaps where the compass is favourably placed. If a ship is fitted with a good pole compass and a convenient stand is fitted for a dumb card, with the aid of Burdwood's or Davis's tables the changes of deviation on the pole compass can always be determined much easier than with an azimuth compass, and in weather when an azimuth compass would be useless. "E. B." in conclusion says it would be interesting to take note of the difference between the navigation of a ship fitted with a pole and the ship fitted with an azimuth compass on a five-foot pedestal, and says plainly that in the first case the cards are examined by the captain previous to shaping his course. And with a firm belief or otherwise in their accuracy he steers for his intended port. Now, where is "E. B.'s" authority for this assertion; he appears to think that daily observations can only be taken where there is a compass on a five-foot pedestal. The adjuster's cards are useful in a new ship, they are generally correct for the first few days; and in a steamer leaving the Tyne or Clyde in dull or thick weather they are the only index of deviation the master has until he obtains observations for himself. And then the pole compass elevated as much as possible above deck beams and fittings, is less liable to sudden changes than



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the five-foot pedestal compass. I will admit that there are many losses owing to bad courses. But the evil would not be cured by condemning the pole compass, on the contrary, it would be aggravated.

The pole compasses that I have been with are not given to wriggling. The one I have now is less affected by the vibration than any of the others. In conclusion, I hope "E. B.'s" article will not have the effect of inducing owners and builders to dispense with that useful auxiliary, the pole compass. Builders and owners are not all inexperienced, any more than the majority of freight steamship masters. With apology for taking up so much space,

I am, yours truly, A COLLIER SKIPPER.

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## MODERN CARGO STEAMERS *VERSUS* THE OCEAN TRAMP.

*To the Editor of the "Nautical Magazine."*

Sir,—Reading in your last issue the excellent letter on Modern Cargo Steamers, I see it contains in its condensed form the nucleus of the whole cause of the disastrous loss of life at sea that the present Government are about to deal with, and well knowing how for many years you have catered well and justly, between seamen and owners, I beg leave to offer up a few more remarks about this all-important matter, from a seaman's point of view.

In all my readings of your fair spoken periodical, I have never noticed one *important factor* (that has to my mind brought about all this fearful loss of life at sea, through foundering), having been mentioned, *viz.*, registered tonnage.

The effect of the registered tonnage is the Ocean Tramp, or to the uninitiated, a too deeply laden cargo steamer. The cause we must find out. Many years ago I penned a letter to the *Shipping and Mercantile Gazette*, when the disease (*viz.*, overloading) was in its infancy, drawing public attention to this important fact.

The principal cause of our using an article—a dangerous article like the Ocean Tramp—was that it was *forced* upon us, not wantonly, but through force of circumstances, by former legislators, who thought, no doubt, at the time, the laws of the registered tonnage were for the commercial weal of Great Britain.

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If at any time any correspondence has been published in your valuable little periodical that has escaped my observation on this matter, I crave your pardon, and cry, Peccavi.

*Question.*—Then to our point. Why do we build the Ocean Tramp when all seamen know they load too deep, show such a *murderous* freeboard, and are so unseakindly ?

*Answer.*—Because we require a steamer that will pay well, and this is what is required of the naval architect—Build me a vessel that will carry a *large cargo*, upon a *small* draft of water, and have as small a registered tonnage as possible ; she must steer by steam, have double steam winches to each hatch, and every other modern steam appliance on deck to save labour, *as we carry a small crew.*

Now, with such a specification, could Sir E. J. Reed, or Mr. Martell ever design a kindly sea-going craft ? I aver 'tis impossible ; and more, they themselves would own it is so. Therefore, we have now come at the *cause* of the loss of life—thus, the cause was the registered tonnage ; the effect, the Ocean Tramp ; for design her how you will—with this specification staring you in the face—you can only produce a veritable Ocean Tramp, and I say in truth and honesty seven-tenths of the Mercantile fleet of Great Britain, have been and are constructed with the above elements in view, *before all other considerations.*

You remark in your editorial note at the end of the letter (signed " Master Mariner " in your last issue) that the writer avows he has no knowledge of naval construction ; I somehow, by the tenor of his letter, doubt this. He may, as he says, have no knowledge of scientific details of construction, yet if the said gentleman —I have not the slightest knowledge who he is—were standing under the bilge of a ship ready for launching on the stocks, I would ten times sooner take his advice upon that ship's sea-going qualifications than I would from the first scientific naval constructor of the day. To be plain, Sir, yet I hope not rude to the naval scientists, I am of the opinion that science in naval construction, or designing, can be, and is carried too far at the present day ; it can be overdone like any other science, till at last their science has bewildered the public, and ends by them getting bewildered in the chaos themselves. What with co-efficients,



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heights of platforms, metacentres, &c., seamen's minds are in a perfect chaos at present. You named a short time ago, shortly after the foundering of the *Austral*, that the captain of the *Austral* was unable to find or determine the scientific capabilities of his vessel. I would like to ask this question: How many seamen out of our 200,000 are there who could have done so? Are there 20 who could? and even if there are 20 who can, they must have been educated where naval construction was part of their studies daily. No seaman living who is still on the sea, and who has been continually to sea like I have been for the last 29 years, could possibly find out the high-flown rules of working metacentres, co-efficients, &c., that are now in vogue. Why every scientific man now-a-days has his galloping horse, he calls a spade, not a spade, but he terms it an agricultural implement for turning the soil, but whatever he calls it if he is a man with a great name, thousands will copy him, although they conscientiously at times know not the meaning of some of his highflown new coined words till they attend him at a lecture, or he publishes a pamphlet explaining his theory. Nautical terms have been coined by the dozens of late years, so I beg to say although a seaman may not be able to find the metacentric line of his vessel, he may still be a better authority than the scientist who can do so as to her qualifications in a sea-way.

With these wall-sided Ocean Tramps, with no rise of floor, built by the mile, and cut off as required, then tapered off at the ends, a sailor's sea chest represents their section from 20 feet from forward to about 30 ft. from aft of a vessel 300 ft. in length; they have no inner skin, nothing but the bare plates and angle bars above their tank tops. I ask, Sir, can such a ship be sea-kindly? Did our Great Creator build the dolphin, porpoise or whale with no rise of floor, &c.; these three fish pass the greatest part of their lives upon the surface of the water, that's why I name them. Nature has taught the world many improvements, but naval constructors or designers go ahead of Nature, and oust her at one side; they build to beat the dolphin, they build to carry well, and to *drown well*, but if I mistake not my man, there is at present a gentleman who sees all this and a good deal more, he's been behind

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the scenes, he has relieved the helm, and he steers well the goodly barque called the *Safety;* he is worthy of all our gratitude and blessing, and we freely give it to him, for see how well he guides the ship—that helmsman is Mr. Chamberlain—he well knows we have had little our own way heretofore, because we must not speak too loud, yet I verily believe this gentleman will drive the Ocean Tramp off the seas, and provide a better article to stay out in at nights than we have at present, and he will not ruin the British shipowner, as Job's comforters keep assuring people he will, but this is what he will do—he will make the Mercantile Marine of this country a credit to every nation on the earth, if those who should do so will only lend him a helping hand.

I own it is very easy for any person to find fault with existing laws, &c., but not so easy to eradicate the evils they complain of. This may be my case to a certain extent, but to get out of the dilemma our Mercantile Marine is in with the Ocean Tramp, will require earnest legislation by the country at large. How could we condemn such a mass of floating capital?—'tis impossible—for, as I said before, seven-tenths of our steamers afloat are Ocean Tramps. And as "Master Mariner" remarks in your last issue, the only way they can be pulled through a heavy storm is by the *most careful nursing* and vigilance. If they will not stand going head to sea, dead slow, tending them with the engines, to give them an extra touch up when they fall off, down they go, and a steamer is posted up at the Royal Exchange as *missing*. Lifeboats are sorry things to trust to; the Ocean Tramp's lifeboats cost now-a-days 17s. for every foot of keel they have—and what can you expect for this money. But they are in keeping with the Tramp, like all the rest of her outfit.

If the Ocean Tramps had hurricane decks (NOT TO PLACE CARGO IN), but to hold the ship's working gear for sea and harbour use, and keep her hatches free from loose top water, they could weather any storm without fear. Every box ought to have a lid to make it secure, so ought a ship to keep her deck openings and hatchways and lives of her crew out of the reach of the loose top water. By converting the Ocean Tramp in this manner, you might make a decent sea-boat of

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her, or have done something to avert foundering. But I picture to myself the cry of horror that would arise in England if some fine night the gentlemen who sit and commune, who make laws and break laws, near old Westminster Abbey, were to pass an Act that after a certain date no ship would be permitted to clear at the Custom House, unless her deck openings were protected by a hurricane deck. I am not quite sure if the wind was from the eastward, that cry of horror could be heard in New York; yet if the Act was passed in ten years time things would go on just as they do now. A ship foundering would seldom be seen in the daily papers. Ships would go on faster than they do now, more cargo would be carried, English prestige on the sea would be greater than ever—in fact all would go on the same as it does now, probably better—with this exception, the loss of life would be immensely reduced. Ships would pay just as well as they do now; then here is a way out of the dilemma if it could be made practicable. If the tonnage laws were altered it would be all the same to a ship in the end. Thus—say all ships paid on their burthen tonnage it would matter little to an owner, and none to dock and harbour authorities, if she paid one shilling a ton on her registered tonnage, or sixpence a ton on her burthen tonnage, it would amount to the same in the end in a monetary point of view, and the inducement would not be held forth to build ships like the Ocean Tramp to carry large cargoes upon small registered tonnage. This tariff could soon be placed in working order by a Royal Commission of picked men, in the House.

Foreign nations would follow suit, as they have always done, with their ships (free trade excepted), and thus the great evil—the life destroyers or Ocean Tramps—would sink into oblivion. Every shipowner you meet now is bursting with eloquence of evil against him who governs the Board of Trade. But, I say, he is right and they are wrong. The British Marine will not fade or wane, it is a bugbear of their own creation. Let him be, he is doing what is right and what is just; he'll hurt them not, but if, as I said before, I mistake not my man, he will do away with that *evil fish* who has, and is still bothering all the mercantile community, and both Lords and Commons—the veritable Ocean Tramp.—Remaining, Sir, yours obediently,

COLLIER SKIPPER.

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## A NEW THING IN SIDE-LIGHTS.

*To the Editor of the "Nautical Magazine."*

Dear Sir,—Coming up Channel on the night of the 12th inst., Eddystone light bearing north, two steamers were reported, one on port the other on starboard-bow, each showing their respective lights, red to red and green to green, about 2 points on each bow. When about 500 yards away the steamer on starboard-bow suddenly put his helm hard-a-port. I immediately stopped and did the same, clearing him only by about a ship's length. He had no red side-light but a red shade on the port-side of his mast-head light. Did you ever hear of this before? If you think it worth while I hope you will give this room in your journal to caution brother shipmasters that they have to look everywhere for side-lights, from the masthead to water-line. Had it not been a clear night and full moon we must have run him down. The vessel was a large schooner-rigged steamer, yards forward.—I am, Sir, yours truly,

London, February 15th, 1884. SHIPMASTER.

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## BOOKS RECEIVED.

### Our Library Table.

Though the number of *Notices to Mariners* and *Hydrographic Notices* issued during the month is somewhat less than usual, the careful attention of the navigator will be none the less required in posting up the defects of his charts and the sailing directions occasioned by the various alterations and changes. The United States Hydrographic Office, under its new chief, is working strenuously to keep seamen well supplied with the latest information necessary for safe navigation, and the Coast Survey Department has recently built a steamer, to be used in the survey of Alaska.

The books, pamphlets, and papers on our table are as follow:—

*Almanach für die k. k. Kriegs-Marine*, 1884, Vienna. This little pocket-book almanack, in addition to a list of the personal and particulars of the pay, &c., of the Imperial Austrian Navy, contains a tabulated description of the various kinds of ordnance in use in the navies of the European nations, a table of the war-ships

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of the world, giving the dimensions, displacement, and details of the armour, armament, &c., of each, also brief descriptions of the ironclad ships, arranged alphabetically.

*Rivista della Marina Mercantile* for Jan., 1884, Trieste, is the first number of a new nautical magazine for the Austro-Hungarian Mercantile Marine, and especially in connection with the Austrian-Lloyd's steamers. In addition to the opening editorial address there are papers on collisions at sea, the first of a series comparing the maritime law of various nations, a description of Bisson's new compass for iron ships, and other interesting papers. Altogether an excellent first number.

*Rivista Marittima* for January, 1884 (Rome), in addition to some papers on war ships of various kinds, contains the first part of an interesting description of the Danish Arctic expedition, written by an Italian Naval officer, who was in the *Dijmphna*, and entitled "A year among the ice of the Sea of Kara."

The *Shipwrecked Mariner* (London, Unwin), for January, with its tales, science and miscellaneous jottings, is also the exponent of a Society whose special aim is to give instant assistance to distressed fishermen and seamen (British or foreign) widows and orphans, to promote and encourage provident habits among seafaring men of all classes, and to reward the gallantry of those who have jeopardised their own lives in saving the lives of others; the annual report speaks favourably of work done and progress made, and we know that the Society well deserves the best support of the community. The *Science Monthly* (London), for February, though discussing a variety of subjects in a brief manner, treats everything intelligently and clearly. *Van Nostrand's Engineering Magazine* (New York), for February, contains nothing specially interesting to nautical men, though full of technical information valuable to the engineer. The *Scientific American* (New York), never fails to find an abundant supply of reading for those who wish to be posted in the science and inventions of the month. The *Revue Maritime et Coloniale* (Paris), for February, continues to give some valuable notes on Madagascar, and on the coasts of Syria and Asia Minor. *Bulletin de la Société de Geographie de l'Est* (Nancy), 4e trimestre, for 1883, discusses, among other subjects, the origin of

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hurricanes; and treats on the Mediterranean of the Ancients, and the scattered islands of the Pacific. *Annalen der Hydographie und Maritimen Meteorologie* (Berlin), Heft I., 1884, has a long paper on the weather, a careful note on the Boca of Buenos Ayres with an illustrative chart, and the result of the work of the U.S. steamer *Enterprise* in obtaining deep sea soundings, &c., in the Indian Ocean during 1883.

We have to hand the latest numbers of *Hansa*, *Das Schiff*, *Le Yacht*, *L'Avenir Militaire*, *Forest and Stream* (U.S.), the *New York Maritime Register*, the *Nautical Gazette* (U.S.), the *Marine Journal of Cincinnati*, and the *San Pedro Shipping Gazette*.

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## SHIPBUILDING, 1883.

### Iron and Steel Steamers Built in the United Kingdom and Registered as New British Ships.

| Ports where built. | No. in 1883. | Gross Tonnage in 1883. | No. in 1882. | Gross Tonnage in 1882. |
|---|---|---|---|---|
| Clyde Ports | 160 | 234,211 | 128 | 202,054 |
| Tyne Ports | 128 | 198,662 | 107 | 169,036 |
| Sunderland | 94 | 161,306 | 79 | 138,730 |
| Hartlepool | 41 | 69,430 | 37 | 65,373 |
| Middlesbro' | 15 | 21,826 | 11 | 17,710 |
| Stockton | 17 | 36,042 | 18 | 33,006 |
| Whitby | 8 | 14,043 | 7 | 11,268 |
| Hull | 22 | 24,528 | 14 | 22,006 |
| London | 21 | 6,840 | 28 | 8,592 |
| Southampton | 10 | 19,321 | 2 | 2,515 |
| Liverpool | 8 | 8,684 | 8 | 15,666 |
| Barrow | 12 | 18,837 | 13 | 34,300 |
| Cumberland Ports | 5 | 5,452 | 3 | 3,124 |
| Belfast | 18 | 27,111 | 11 | 20,325 |
| Aberdeen | 12 | 10,993 | 6 | 7,298 |
| Dundee | 18 | 21,925 | 8 | 12,303 |
| Grangemouth | 6 | 4,574 | 3 | 1,592 |
| Kirkaldy | 3 | 4,906 | 2 | 5,268 |
| Leith | 14 | 6,786 | 10 | 13,694 |
| Other Ports | 46 | 17,360 | 22 | 5,867 |
| **Total** | 658 | 912,837 | 517 | 789,727 |

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## Steel Steamers Built in the United Kingdom and Registered as New British Ships.

| Ports where built. | No. in 1883. | Gross Tonnage in 1883. | No. in 1882. | Gross Tonnage in 1882. |
|---|---|---|---|---|
| Clyde Ports | 55 | 94,257 | 37 | 74,923 |
| Tyne Ports | 2 | 835 | 2 | 255 |
| Sunderland | 2 | 3,179 | — | — |
| Hull | 2 | 3,573 | 2 | 3,408 |
| London | 14 | 3,886 | 8 | 2,514 |
| Southampton | — | — | 1 | 340 |
| Liverpool | 1 | 2,993 | 1 | 894 |
| Barrow | 3 | 7,838 | 3 | 12,116 |
| Cumberland Ports | 1 | 1,512 | — | — |
| Belfast | 5 | 16,083 | 3 | 9,863 |
| Dundee | 8 | 12,137 | 1 | 4,043 |
| Grangemouth | 2 | 2,236 | 2 | 1,172 |
| Kirkaldy | 3 | 4,906 | 1 | 1,863 |
| Leith | 1 | 1,804 | 1 | 1,640 |
| Other Ports | 4 | 2,380 | 2 | 358 |
| Total | 103 | 156,619 | 64 | 113,389 |

## Iron and Steel Sailing Ships Built in the United Kingdom and Registered as New British Ships.

| Ports where Built. | No in 1883. | Gross Tonnage in 1883. | No in 1882. | Gross Tonnage in 1882. |
|---|---|---|---|---|
| Clyde Ports | 49 | 64,045 | 49 | 650,154 |
| Tyne Ports | — | — | 1 | 251 |
| Sunderland | 3 | 4,653 | 5 | 7,436 |
| Stockton | 2 | 3,479 | 1 | 1,712 |
| London | 1 | 91 | 5 | 877 |
| Southampton | 8 | 14,874 | 4 | 8,001 |
| Liverpool | 11 | 19,433 | 11 | 21,345 |
| Barrow | 1 | 2,129 | — | — |
| Cumberland Ports | 4 | 7,439 | 5 | 7,370 |
| Belfast | 3 | 7,723 | 4 | 7,289 |
| Aberdeen | — | — | 2 | 2,705 |
| Dundee | 3 | 3,021 | 3 | 3,226 |
| Leith | 2 | 3,765 | 1 | 1,032 |
| Other Ports | 1 | 8 | — | — |
| Total | 87 | 130,660 | 91 | 126,398 |

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Of the total for 1883, 9 sailing ships with an aggregate tonnage of 10,583 were steel. Of the total for 1882, 12 with an aggregate tonnage of 10,156 were steel.

During 1883 there were registered four steamers of over 5,000 tons gross. They were :—

*Aurania*, steel; length, 470·; breadth, 57·2; depth, 37·2; gross tonnage, 7,269; registered horse-power, 1,500. Built and engined by Messrs. J. and G. Thomson, of Glasgow, for the Cunard Company's line from Liverpool to the United States.

*Oregon*, iron; length, 501·; breadth, 54·2; depth, 38·; gross tonnage, 7,375; registered horse-power, 2,000. Built and engined by Messrs. John Elder & Co., of Glasgow, for the Guion Company's line from Liverpool to the United States.

*City of Chicago*, iron; length, 430·6; breadth, 45·; depth, 33·6; gross tonnage, 5,202; registered horse-power, 900. Built by Messrs. C. Connell & Co., Glasgow, and engined by Messrs. J. & J. Thomson, Glasgow, for the Inman Company's line from Liverpool to the United States.

*Bitterne*, iron; length, 387·2; breadth, 44·4; depth, 33·3; gross tonnage, 5,085; registered horse-power, 700. Built and engined by Messrs. Oswald, Mordaunt & Co., Southampton, for Messrs. Briggs, of Sunderland.

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## MARINE INVENTIONS.

*Recent Patents—Compiled for this Journal by Messrs. W. P. Thompson and Boult, British and International Patent and Tradesmark Agents and Consulting Engineers, 323, High Holborn, London, W.C.*

### PATENTS PUBLISHED.

1177. 5th March, 1883. William Marsland Francis Schweider, a partner in the firm of Forrestt and Son, of Norway Yard, Limehouse, Middlesex. "Improvements in coast lifeboats, and in ships' lifeboats and in the fittings and appliances for both kinds." The bilges of the boat are constructed well forward amidships and

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aft, especially under the bows and quarters, and gain greater stability and reduce the liability to capsize. The stem is rounded back at the upper end so as to prevent the boat being nipped under any projecting part of a vessel, and the forward end of the after air compartment is rounded above the gunwale to present less resistance to the wind and to break the force of seas shipped over the boat's waist. The iron keel is wide and horizontal, which presents several advantages and reduces the draught. The keel is provided with a centre-board which can be raised or lowered as required. The bows are low and nearly parallel between bow and stroke rowlock, the leverage of the oars being equalised. A fender of wood is put around the outside of the boat to prevent its being fouled when laying broadside on to a ship. The boat has holes and tubes with self-acting valves like other lifeboats. In the forward or aft air receptacle, or in both, a receiver for oil is provided so that oil can be thrown upon the water. The stretchers are so arranged as to give a solid support to the whole foot of the rower, and they are adjustable. The mast is stepped in a shallow hole or on a pin, and the shrouds are fastened as usual, but dependent in one position on the well-known cable-holder, consisting of a rotating sleeve with a slot in which rests a pin forming a link from which the shrouds proceed. By an automatic device consisting of a lever and weight the fastening is released when necessary.

1309. March 14, 1883. George Henry Down, of Cardiff, in the County of Glamorgan. "Improved means for obviating or reducing damage and loss arising from collisions of or leaks in ships." The first part of this invention relates to means of obviating or reducing the destruction of ships and loss of life resulting from collisions, and consists in placing a block of india-rubber or other pliant and elastic material, or a series of two or more blocks piled vertically in front of the bows of a ship, the block or blocks being adjustable to any desired level, so that on the occurrence of a collision the blow is received by the buffers so formed. To this end metal strips or rails extend vertically of each side of the stem, and are recessed at the back to form a way or groove to receive the buffer furnished with a "shoe" or frame to fit over the strips or rails. It is preferred, in applying the

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buffers, to form a groove in each side of the stem into which the shoe or frame of the buffer takes. The buffer is raised or lowered by a davit or by any suitable tackle. The second part of this invention relates to the means of stopping leaks or holes. A guard or shield of canvas, matting, or other suitable material is secured on a frame partly made of rubber. This guard is lowered over the leak till the waterproof material excludes the water.

1818. 10th April, 1883. John Philp and Walter Forrester, both of Liverpool, in the County of Lancaster. "Improvements in apparatus applicable for steering vessels in case of accident or for a life-raft." This invention is designed to be immediately available when the rudder of a vessel is damaged. It consists of a float or pontoon, elliptical in plan, with sharp ends above and below, it carries a pair of cross-heads projecting beyond the sides. To the cross-heads links are pivoted, and connected with the vessel. By hauling in or letting-out the connecting chain, the axis of the pontoon becomes oblique to that of the ship, and this enables the ship to veer.

2381. 10th May, 1883. F. W. Brewster, of Bloomsbury, in the County of Middlesex. "Improvements in the manufacture of buoyant contrivances for life-saving and other purposes." This invention relates to certain improvements in the manufacture of buoyant contrivances, particularly such as can readily be wound about the body, or any article to be preserved from sinking. In one form it is made as a continuous line by enclosing within a flexible tubing a filling of cork which has been carbonized and mixed, if required, with lampblack to make it water repellant. At suitable intervals the filling is separated into sections by twisting, tying, sewing, or otherwise. The enclosing tube need not necessarily be waterproof. Suitable fastenings may be provided on the contrivance.

2412. 12th May, 1883. E. J. Reed, K.C.B., M.P., of Broadway Chambers, Westminster, in the County of Middlesex, Naval Constructor. "Improvements in the construction of ships of war." The object of this invention is to give to ships of war greater protection against shells striking near the waterline or below it and also against tor-

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pedoes. This is accomplished by placing the magazines, boilers and other delicate portions higher up in the ship than heretofore done in armoured vessels, and by protecting them from beneath by an armoured deck, through which the piston rod or rods work downward, vertically or otherwise, to operate the propeller. In combination with this armoured deck, or inner bottom, a lightly constructed outer bottom is used, principally for the sake of obtaining buoyancy. This is divided into numerous watertight compartments, so as to afford sufficient buoyancy even when repeatedly struck. To give ample stability the armoured part of the vessel is made circular or elliptical in section or of such other form as will give buoyancy and stability. The outer shell may, if desired, be likewise partially protected with armour.

2448. May 15, 1883. E. C. G. Thomas, of No. 11, Norland Square, Notting Hill, in the county of Middlesex. "Improvements in electric light buoys." This invention relates to the utilization of a buoy described in the specification to Letters Patent, No. 3,556, 1881, the sides whereof are vertical and concave, as a light buoy. To this end water wheels are mounted in the hollow parts of the sides of the buoys, which sides are so shaped that, whatever the direction of the waves, they always rotate one of the waterwheels by impact. In or upon the buoy is placed a dynamo-machine, with a suitable accumulator and an electric lamp. Clockwork is provided, and makes and breaks contact at stated times, so that the electric lamp is brought into action for a suitable number of hours.

2375. 10th May, 1883. J. D. Jack, manager, Newmill Ironworks, Elgin, N. B. "A combined net hauling machine and boat's capstan." The object of this invention is to provide an improved form of apparatus to be used on board fishing boats, for hauling in nets, raising masts, hoisting sails, raising anchors, and analogous operations. One form consists of three horizontal sheaves arranged in a triangle, the centre sheave forming its apex, and being farthest from the central spindle or standard of the machine. The main sole plate of the machine is cast iron, and is provided with two rollers for facilitating the shifting of the machine, say on shears on the deck. The sole plate has attached to it a spindle

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projecting downwards through the shears and fitted with a nut and washer for fixing the machine in place. On the central spindle there is a cast iron socket, to which is attached the framing carrying the spur-gearing and the hauling sheaves. The socket is free to revolve, and the nets may be hauled in a straight line from either quarter. On the centre spindle immediately over the net-hauling machinery is placed a friction pulley and strap with differential gear attached. By means of a small lever attached to the friction strap, the net can be instantaneously let go when required. The lower sleeve and the upper capstan can be made to revolve simultaneously by bevel gearing and the friction strap. On the centre spindle is placed the capstan, which can be used independently. On the top thereof there are two bevel-toothed wheels of different diameters into which gear two pinions. The fly-wheel centre is fitted with a sleeve on which is keyed a bevel pinion. Other features are also described.

2614. 25th May, 1883. Lake, a communication from Winfield Scott Sims, of Newark, New Jersey, United States of America. "Improvements in or relations to torpedo boats or submarine vessels." This invention relates to improvements in torpedo boats and submarine vessels deriving the power for steering and propelling from an electric generator on shore or at a station. Propulsion is effected by an electro motor and steering by electro magnets. The boat may conveniently be made in sections which in use are connected say by screws, and provided with rings of rubber and with flanges to make watertight joints. An elongated float connected with the boat by stanchions causes sufficient submergence. At the forward end there is a guard capable of severing an obstruction. The yoke of the rudder is adjustable so as to allow the possible deflection of the boat to be regulated. Strong metal rings or stays serve to stiffen the boat. Upon the float are rods provided with flags, balls, or discs, to serve as guides in directing the operation of the boat. The rods are hinged, passing readily under ropes, or the like, and rising again automatically.

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## LOSS OF LIFE FROM BRITISH SHIPS.

MR. CHAMBERLAIN made a statement "that during a single year one person in sixty employed on British ships had met with a violent death by drowning." This statement has been criticised and even denied by Mr. Nathaniel Dunlop, by Mr. James Laing, by our excellent contemporary, the *Shipping and Mercantile Gazette*, and by various sorts and conditions of men in the press and elsewhere; but the criticisms and denials have only had the effect of leading Mr. Chamberlain to repeat his statement with increased emphasis. It is indeed unlikely that a Minister of the Crown in the position of Mr. Chamberlain, and having command of the national statistics, could make a mistake in such a matter. We have already in our columns given figures which did in our opinion show the absolute accuracy of Mr. Chamberlain's statement; but still there are to be found people fairly well-informed on Mercantile Marine matters generally who will not believe that Mr. Chamberlain's statement is or can be true. These unbelievers have objected to Mr. Chamberlain's figures for many reasons, some that they include life lost in fishing vessels, some that they include lives lost in small coasters, some that they include life lost in wooden vessels, some that they include lives lost by strandings, and some that they include lives lost by collisions. Indeed, by a sort of refining process, which seems to be satisfactory to a certain order of mind, lives lost from one class of ship or one cause, or another class of ship or another cause, are eliminated, and then the triumphal shout arises that Mr. Chamberlain is wrong. We only wish he could be found to be wrong. Indeed, we incline to the belief that if one fact could gratify him more than another it would be conclusive proof that he is wrong. We have done our best, having an abundant knowledge of the Tables in Parliamentary returns and in the "Wreck Abstracts," to find him wrong; we have tested his figures in every way; but alas the more exhaustive, complete, and critical we have made our

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examination, the more are we satisfied of the right hon. gentleman's absolute accuracy. We only wish, as we have before stated, that it were otherwise; and that we could have joined in a triumphant strain with Mr. James Laing and Mr. Nathaniel Dunlop. All hope of this has however fled and we must accept Mr. Chamberlain's figures as incontrovertible. We have not been able to understand why fishermen's lives lost should not be included in loss of life from British ships; but many persons think otherwise, and we do not intend to go into the question, though we shall say a word about it further on. The return just presented to both Houses of Parliament by command of Her Majesty, is instructive and dismal. This return is an attempt made for the first time to put before the Legislature and the public, in one page, the death-roll of the British Merchant Service for 12 years. And the heading of the return shows that in the lives lost, the lives lost from fishing vessels are not included. This return is probably the one foreshadowed in Mr. Chamberlain's speech at Newcastle, for besides not including fishing vessels it does not include any ship registered elsewhere than in the "United Kingdom," and as the term United Kingdom does not include Channel Islands this return is for such British Merchant trading ships (exclusive of fishing vessels) as are registered at a port in England and Wales, Scotland, Ireland, or the Isle of Man only. The ground is therefore cleared, and we are at last face to face with losses of life over which owners in the United Kingdom have more or less control. This return shows, what we imagine could scarcely have been expected, that for one year deaths by drowning are in the proportion even there of 1 in 60, and that if other accidental deaths are added the proportion is 1 in 56 for the year so often quoted in this discussion. There is a grain of comfort in the figures for the year 1882, for we there find that the deaths are 1 in 82 and 1 in 75 respectively.

The figures are now fairly before the public, and the issue comes simply to this. Is it necessary and inevitable that 1 life in 60 or 1 life in 82 should be lost by drowning in order that our Mercantile Marine may flourish? The shipowners and those who argue for them say "Yes," and they go further and say that this loss cannot be appreciably lessened by any greater care on the part of owners or



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by lighter loading, or by any interference on the part of the Legislature. If this be true, then the sacrifice, great as it is, must be endured. On the other hand there are those persons, and amongst them men of practical acquaintance with and full knowledge of the subject, who fearlessly assert that a very great proportion of this loss is preventable, and is preventable by common care and forethought on the part of owners and of other persons having control of the ships and of sending them to sea. It used to be accepted as a fact that a ship well built, well found, well loaded and well navigated, ought to be able to keep the sea in all weather. This would appear to be either equally right or wrong of ships in these modern days; but if it be wrong, then it is certainly the duty of those who think so to prove it. The sailors and shipmasters who write to us, inform us that what was true of old ships is true of ships now; and that there is no alteration in the conditions of weather and sea, though there is great alteration in the loading, management and manning of ships.

One thing is clear—and it is, that the only way to lead to increased care in management and loading is to increase the personal responsibility of the owner, and to lessen the interference of the State in the business of daily life. We wrote this over and over again, so far back as 1871 and 1872, and it is a hopeful sign that we can write it again in 1884, and this time in the full knowledge that its truth is duly appreciated by the very best shipowners of the country.

One subject more than ever pressing itself to the front, is the question of manning. This question with that of loading will have to be seriously faced and settled on its merits. A cool statement of facts, and close and cool arguments are needed. The time for abusing officials and for laying the blame on any particular class of persons is past. The fact stands out that many ships are undermanned and many are overloaded—and here again the question naturally arises whether these deficiencies will not be best remedied by fixing the responsibility certainly and irremovably on the owners, and taking it away from officers of the State? The change must, to be real, be absolute and complete.

The Parliamentary return is as follows :—

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Lives lost by Drowning or other Accident in British Merchant Ships registered in the United Kingdom. Lives of Passengers lost are distinguished from Lives of Crews lost. Calendar Years 1871 to 1882 inclusive.

| Year. | Masters and Seamen employed. | Lives lost. | | | | | Percentages and Proportions. | | Lives lost in Merchant Ships registered in United Kingdom. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Drowned. | | | Seamen lost by Accident other than Drowning. | Total Number lost by Drowning and other Accidents. | Lives lost by Drowning of Persons employed. | Lives lost by Drowning and other Accident of Persons employed. | Crew. | Passengers. | Total. |
| | | Masters and Seamen lost in Wrecks and Casualties. | Seamen lost when Vessel was not damaged. | Total. | | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| 1871 | 218,502 | 1,485 | 976 | 2,461 | 279 | 2,740 | 1·13 or 1 in 89 | 1·25 or 1 in 80 | 2,740 | 18 | 2,758 |
| 1872 | 222,838 | 2,162 | 973 | 3,135 | 327 | 3,462 | 1·41 or 1 in 71 | 1·55 or 1 in 64 | 3,462 | 71 | 3,533 |
| 1873 | 220,192 | 1,789 | 1,032 | 2,821 | 291 | 3,112 | 1·28 or 1 in 78 | 1·41 or 1 in 71 | 3,112 | 1,167 | 4,279 |
| 1874 | 220,962 | 2,277 | 1,040 | 3,317 | 282 | 3,599 | 1·50 or 1 in 67 | 1·63 or 1 in 61 | 3,599 | 572 | 4,171 |
| 1875 | 216,420 | 1,299 | 987 | 2,286 | 306 | 2,592 | 1·06 or 1 in 95 | 1·2 or 1 in 83 | 2,592 | 193 | 2,785 |
| 1876 | 215,670 | 1,650 | 1,038 | 2,688 | 307 | 2,990 | 1·24 or 1 in 80 | 1·39 or 1 in 72 | 2,990 | 178 | 3,168 |
| 1877 | 213,627 | 1,233 | 1,077 | 2 310 | 340 | 2,650 | 1·08 or 1 in 92 | 1·24 or 1 in 81 | 2,650 | 208 | 2,858 |
| 1878 | 212,534 | 1,181 | 922 | 2,053 | 279 | 2,332 | ·97 or 1 in 104 | 1·1 or 1 in 91 | 2,332 | 60 | 2,392 |
| 1879 | 210,476 | 1,388 | 1,023 | 2,361 | 269 | 2,630 | 1·12 or 1 in 89 | 1·25 or 1 in 80 | 2,630 | 218 | 2,848 |
| 1880 | 210,026 | 1,681 | 1,001 | 2,682 | 291 | 2,973 | 1·38 or 1 in 78 | 1·43 or 1 in 71 | 2,973 | 98 | 3,071 |
| 1881 | 209,481 | 2,352 | 1,123 | 3,475 | 273 | 3,748 | 1·66 or 1 in 60 | 1·79 or 1 in 56 | 3,748 | 231 | 3,979 |
| 1882 | 212,343 | 1,510 | 1,036 | 2,546 | 286 | 2,832 | 1·2 or 1 in 83 | 1·33 or 1 in 75 | 2,832 | 53 | 2,885 |
| | | 19,907 | 12,223 | 32,130 | 3,580 | 35,630 | — | — | 35,660 | 3,062 | 38,722 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1871 | 218,502 | 1,485 | 976 | 2,461 | 279 | 2,740 | 1·13 or 1 in 89 | 1·25 or 1 in 80 | 2,740 | 18 | 2,758 |
| 1872 | 222,838 | 2,162 | 973 | 3,135 | 327 | 3,462 | 1·41 or 1 in 71 | 1·55 or 1 in 64 | 3,462 | 71 | 3,533 |
| 1873 | 220,192 | 1,789 | 1,032 | 2,821 | 291 | 3,112 | 1·28 or 1 in 78 | 1·41 or 1 in 71 | 3,112 | 1,167 | 4,279 |
| 1874 | 220,962 | 2,277 | 1,040 | 3,317 | 282 | 3,599 | 1·50 or 1 in 67 | 1·63 or 1 in 61 | 3,599 | 572 | 4,171 |
| 1875 | 216,420 | 1,299 | 987 | 2,286 | 306 | 2,592 | 1·06 or 1 in 95 | 1·2 or 1 in 83 | 2,592 | 193 | 2,785 |
| 1876 | 215,670 | 1,650 | 1,038 | 2,688 | 307 | 2,990 | 1·24 or 1 in 80 | 1·39 or 1 in 72 | 2,990 | 178 | 3,168 |
| 1877 | 213,627 | 1,233 | 1,077 | 2 310 | 340 | 2,650 | 1·08 or 1 in 92 | 1·24 or 1 in 81 | 2,650 | 208 | 2,858 |
| 1878 | 212,534 | 1,181 | 922 | 2,053 | 279 | 2,332 | ·97 or 1 in 104 | 1·1 or 1 in 91 | 2,332 | 60 | 2,392 |
| 1879 | 210,476 | 1,388 | 1,023 | 2,361 | 269 | 2,630 | 1·12 or 1 in 89 | 1·25 or 1 in 80 | 2,630 | 218 | 2,848 |
| 1880 | 210,026 | 1,681 | 1,001 | 2,682 | 291 | 2,973 | 1·38 or 1 in 78 | 1·43 or 1 in 71 | 2,973 | 98 | 3,071 |
| 1881 | 209,481 | 2,352 | 1,123 | 3,475 | 273 | 3,748 | 1·66 or 1 in 60 | 1·79 or 1 in 56 | 3,748 | 231 | 3,979 |
| 1882 | 212,343 | 1,510 | 1,036 | 2,546 | 286 | 2,832 | 1·2 or 1 in 83 | 1·33 or 1 in 75 | 2,832 | 53 | 2,885 |
| | | 19,907 | 12,223 | 32,130 | 3,580 | 35,630 | — | — | 35,660 | 3,062 | 38,722 |

s from which column 1 is compiled include a number of men employed in Fishing Vessels, and the returns
re founded include some duplicate entries and a number of deaths in Fishing and Colonial Vessels. A
ws that these errors balance each other and that the proportions given in cols. 7 and 8 are therefore

epartment, 5th February, 1884.

T. H. FARRER.



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# TIDE TABLES FOR MARCH, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| | | | | NORTH SHIELDS | | LEITH. | | DEVONPORT. | | DOVER. | | WESTON-SUPER-MARE. | | LIVERPOOL. | | GREENOCK. | | QUEENSTOWN | | KINGSTOWN. | | LONDONDERRY. | | BREST. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| | | | | 4 31 | 8 45 | 9 6 | 5 39 | 6 1 | 4 38 | 4 55 | 8 0 | 8 20 | 1 18 | 1 40 | 9 9 | 9 28 | 1 16 | 1 37 | 2 6 | 2 27 | 7 19 | 7 40 | 1 7 | 1 29 | 10 11 | 10 31 | 6 0 | 6 22 |
| M | 3 | 5 32 | 5 12 | 9 28 | 9 50 | 6 23 | 6 45 | 5 17 | 5 40 | 8 40 | 9 1 | 2 2 | 2 25 | 9 47 | 10 6 | 1 58 | 2 20 | 2 48 | 3 9 | 8 1 | 8 22 | 1 51 | 2 14 | 10 58 | 11 17 | 6 44 | 7 6 |
| Tu | 4 | 5 32 | 5 55 | 10 12 | 10 36 | 7 8 | 7 33 | 6 4 | 6 20 | 9 22 | 9 45 | 2 48 | 3 11 | 10 26 | 10 46 | 2 42 | 3 5 | 3 31 | 3 53 | 8 44 | 9 7 | 2 38 | 3 3 | 11 46 | — | 7 30 | 7 56 |
| W | 5 | 6 26 | 6 46 | 11 4 | 11 37 | 8 2 | 8 34 | 6 58 | 7 29 | 10 11 | 10 39 | 3 36 | 4 2 | 11 9 | 11 36 | 3 30 | 3 58 | 4 18 | 4 46 | 9 33 | 10 2 | 3 30 | 4 0 | 0 20 | 0 59 | 8 24 | 8 56 |
| Th | 6 | 7 14 | 7 47 | — | 0 14 | 9 11 | 9 51 | 8 4 | 8 44 | 11 9 | 11 43 | 4 31 | 5 2 | — | 0 9 | 4 30 | 5 7 | 5 17 | 5 51 | 10 36 | 11 16 | 4 35 | 5 13 | 1 42 | 2 28 | 9 31 | 10 11 |
| F | 7 | 8 24 | 9 6 | 0 53 | 1 33 | 10 34 | 11 18 | 9 28 | 10 13 | — | 0 22 | 5 37 | 6 16 | 0 49 | 1 34 | 5 52 | 6 42 | 6 30 | 7 18 | — | noon | 5 53 | 6 34 | 3 12 | 3 53 | 10 56 | 11 43 |
| S | 8 | 9 53 | 10 28 | 2 14 | 2 54 | — | 0 1 | 10 54 | 11 32 | 1 5 | 1 49 | 6 59 | 7 42 | 2 19 | 3 3 | 7 28 | 8 8 | 7 58 | 8 40 | 0 44 | 1 27 | 7 14 | 7 58 | 4 31 | 5 3 | — | 0 26 |
| S | 9 | 11 18 | 11 57 | 3 33 | 4 8 | 0 39 | 1 12 | — | 0 5 | 2 30 | 3 7 | 8 20 | 8 52 | 3 44 | 4 21 | 8 43 | 9 12 | 9 17 | 9 48 | 2 6 | 2 40 | 8 29 | 9 0 | 5 30 | 5 54 | 1 4 | 1 35 |
| M | 10 | — | 0 29 | 4 38 | 5 4 | 1 39 | 2 3 | 0 33 | 0 57 | 3 40 | 4 9 | 9 18 | 9 43 | 4 53 | 5 23 | 9 37 | 10 0 | 10 16 | 10 41 | 3 8 | 3 34 | 9 29 | 9 54 | 6 17 | 6 40 | 2 1 | 2 25 |
| Tu | 11 | 0 56 | 1 19 | 5 26 | 5 48 | 2 26 | 2 47 | 1 20 | 1 42 | 4 34 | 4 56 | 10 7 | 10 29 | 5 48 | 6 11 | 10 21 | 10 41 | 11 4 | 11 26 | 3 58 | 4 20 | 10 15 | 10 34 | 7 3 | 7 24 | 2 47 | 3 7 |
| W | 12 | 1 42 | 2 2 | 6 9 | 6 29 | 3 6 | 3 24 | 2 3 | 2 22 | 5 20 | 5 40 | 10 50 | 11 10 | 6 33 | 6 53 | 11 0 | 11 19 | 11 47 | — | 4 40 | 4 59 | 10 52 | 11 9 | 7 44 | 8 2 | 3 26 | 3 45 |
| Th | 13 | 2 21 | 2 39 | 6 48 | 7 6 | 3 41 | 3 58 | 2 40 | 2 57 | 5 59 | 6 17 | 11 30 | 11 49 | 7 12 | 7 30 | 11 37 | 11 55 | 0 7 | 0 25 | 5 18 | 5 36 | 11 26 | 11 43 | 8 19 | 8 35 | 4 8 | 4 20 |
| F | 14 | 2 56 | 3 12 | 7 24 | 7 41 | 4 15 | 4 32 | 3 18 | 3 29 | 6 35 | 6 52 | — | 0 8 | 7 47 | 8 3 | — | 0 13 | 0 43 | 1 1 | 5 54 | 6 11 | — | noon | 8 50 | 9 5 | 4 37 | 4 53 |
| S | 15 | 3 27 | 3 44 | 7 57 | 8 13 | 4 49 | 5 6 | 3 45 | 4 1 | 7 8 | 7 22 | 0 26 | 0 44 | 8 19 | 8 34 | 0 30 | 0 46 | 1 18 | 1 35 | 6 27 | 6 43 | 0 17 | 0 34 | 9 20 | 9 35 | 5 9 | 5 25 |
| S | 16 | 4 0 | 4 16 | 8 29 | 8 45 | 5 23 | 5 39 | 4 17 | 4 33 | 7 36 | 7 50 | 1 2 | 1 19 | 8 49 | 9 4 | 1 2 | 1 17 | 1 51 | 2 6 | 6 59 | 7 15 | 0 51 | 1 8 | 9 50 | 10 5 | 5 40 | 5 56 |
| M | 17 | 4 31 | 4 47 | 9 1 | 9 18 | 5 56 | 6 13 | 4 50 | 5 7 | 8 4 | 8 18 | 1 36 | 1 53 | 9 19 | 9 34 | 1 32 | 1 48 | 2 22 | 2 38 | 7 31 | 7 47 | 1 25 | 1 42 | 10 21 | 10 38 | 6 12 | 6 28 |
| Tu | 18 | 5 2 | 5 18 | 9 35 | 9 52 | 6 30 | 6 47 | 5 25 | 5 43 | 8 33 | 8 48 | 2 10 | 2 27 | 9 48 | 10 2 | 2 4 | 2 20 | 2 54 | 3 10 | 8 3 | 8 19 | 1 59 | 2 17 | 10 56 | 11 16 | 6 45 | 7 3 |
| W | 19 | 5 34 | 5 52 | 10 9 | 10 28 | 7 5 | 7 26 | 6 2 | 6 22 | 9 5 | 9 24 | 2 45 | 3 3 | 10 16 | 10 31 | 2 37 | 2 56 | 3 27 | 3 45 | 8 36 | 8 54 | 2 35 | 2 55 | 11 40 | — | 7 22 | 7 43 |
| Th | 20 | 6 12 | 6 33 | 10 51 | 11 17 | 7 49 | 8 15 | 6 44 | 7 9 | 9 45 | 10 8 | 3 22 | 3 43 | 10 49 | 11 12 | 3 16 | 3 39 | 4 5 | 4 27 | 9 14 | 9 38 | 3 17 | 3 41 | 0 8 | 0 39 | 8 5 | 8 30 |
| F | 21 | 6 57 | 7 24 | 11 49 | — | 8 45 | 9 21 | 7 40 | 8 16 | 10 33 | 11 2 | 4 7 | 4 35 | 11 43 | — | 4 7 | 4 40 | 4 52 | 5 23 | 10 7 | 10 44 | 4 10 | 4 45 | 1 16 | 1 58 | 9 2 | 9 40 |
| S | 22 | 7 57 | 8 33 | 0 26 | 1 4 | 10 3 | 10 45 | 8 56 | 9 38 | 11 38 | — | 5 8 | 5 45 | 0 20 | 1 0 | 5 20 | 6 5 | 6 0 | 6 40 | 11 25 | — | 5 24 | 6 8 | 2 41 | 3 22 | 10 22 | 11 7 |
| S | 23 | 9 17 | 10 8 | 1 43 | 2 22 | 11 26 | — | 10 20 | 10 58 | 0 20 | 1 4 | 6 24 | 7 2 | 1 42 | 2 23 | 6 50 | 7 31 | 7 21 | 8 1 | 0 8 | 0 48 | 6 42 | 7 19 | 4 0 | 4 38 | 11 49 | — |
| M | 24 | 10 44 | 11 19 | 2 59 | 3 33 | 0 4 | 0 38 | 11 32 | — | 1 45 | 2 25 | 7 40 | 8 16 | 3 3 | 3 40 | 8 8 | 8 40 | 8 39 | 9 13 | 1 27 | 2 8 | 7 58 | 8 25 | 5 2 | 5 27 | 0 28 | 1 1 |
| Tu | 25 | 11 52 | — | 4 5 | 4 33 | 1 8 | 1 34 | 0 2 | 0 28 | 3 0 | 3 31 | 8 45 | 9 8 | 4 14 | 4 43 | 9 6 | 9 28 | 9 42 | 10 6 | 2 34 | 2 59 | 8 55 | 9 20 | 5 49 | 6 9 | 1 10 | 1 53 |
| W | 26 | 0 20 | 0 45 | 4 56 | 5 17 | 1 55 | 2 15 | 0 50 | 1 10 | 3 58 | 4 23 | 9 31 | 9 54 | 5 9 | 5 34 | 9 48 | 10 8 | 10 28 | 10 50 | 3 22 | 3 45 | 9 42 | 10 3 | 6 29 | 6 50 | 2 14 | 2 34 |
| Th | 27 | 1 7 | 1 28 | 5 36 | 5 56 | 2 34 | 2 53 | 1 30 | 1 50 | 4 47 | 5 10 | 10 16 | 10 38 | 5 58 | 6 20 | 10 28 | 10 48 | 11 12 | 11 34 | 4 7 | 4 28 | 10 22 | 10 40 | 7 11 | 7 32 | 2 54 | 3 14 |
| F | 28 | 1 48 | 2 8 | 6 16 | 6 37 | 3 11 | 3 30 | 2 10 | 2 30 | 5 32 | 5 54 | 11 0 | 11 23 | 6 42 | 7 4 | 11 9 | 11 30 | 11 56 | — | 4 49 | 5 10 | 10 58 | 11 18 | 7 52 | 8 12 | 3 34 | 3 55 |
| S | 29 | 2 27 | 2 47 | 6 58 | 7 19 | 3 50 | 4 11 | 2 49 | 3 8 | 6 16 | 6 37 | 11 45 | — | 7 26 | 7 47 | 11 51 | — | 0 18 | 0 40 | 5 32 | 5 54 | 11 39 | — | 8 31 | 8 50 | 4 16 | 4 37 |
| S | 30 | 3 8 | 3 29 | 7 40 | 8 1 | 4 33 | 4 56 | 3 28 | 3 49 | 6 58 | 7 19 | 0 8 | 0 31 | 8 8 | 8 29 | 0 12 | 0 34 | 1 2 | 1 24 | 6 16 | 6 38 | 0 1 | 0 23 | 9 9 | 9 29 | 4 58 | 5 19 |
| M | 31 | 3 48 | 4 10 | 8 21 | 8 46 | 5 17 | 5 40 | 4 11 | 4 34 | 7 40 | 8 1 | 0 56 | 1 19 | 8 50 | 9 11 | 0 56 | 1 18 | 1 46 | 2 8 | 7 0 | 7 22 | 0 46 | 1 8 | 9 50 | 10 12 | 5 41 | 6 3 |
| | | 4 46 | 4 19 | 8 28 | 8 46 | 5 57 | 6 21 | 4 57 | 5 21 | 8 28 | 8 46 | 1 48 | 2 7 | 9 29 | 9 50 | 1 40 | 2 2 | 2 29 | 2 52 | 7 44 | 8 7 | 1 22 | 1 50 | 10 35 | 11 0 | 6 20 | 6 50 |

The Parliamentary question I asked on the 3rd inst. as to the change in the Stake? The change is movably the best remedies for the cla. undern. LL.

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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* — *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −3 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 13 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 3 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 21 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbeltion | −0 28 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 3 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 3 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Hushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 53 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 53 | N. Shields |
| Houlleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 3 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 43 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 18 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 18 | Devonport |
| Peterhead | −1 48 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 33 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 8 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 53 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 22 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 22 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 43 | London |
| Youghall | +0 18 | Queenstown |

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# MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 85 | England — Thames Entrance — Alexandra Channel | Alteration of buoyage. |
| 86 | „ West Coast—Bristol Channel—Bideford | Arc of low light extended. |
| 87 | Ireland—Lough Foyle Entrance—Tuns Bank | E. buoy altered in character. |
| 88 | North Sea — Jutland — West Coast — Lodberg | Intended light. |
| 89 | Norway—South and West Coasts | Various new lights and fog-signals. |
| 90 | „ West Coast | Various new lights. |
| 91 | Baltic Entrance—Kattegat—Sweden—Winga and Nidingen | Siren fog-signals. |
| 92 | Baltic—Sweden—Kalmar Sund—Grimskär | Provisional light. |
| 93 | „ Gulf of Finland—Helsingfors—Gustaf Sound | New leading lights. |
| 94 | „ „ Sveaborg—Gröhara Rock | New light. |
| 95 | Mediterranean—France—Gulf of Saintes Maries—La Gacholle | New light. |
| 96 | „ Spain—Port Aguilas | Destruction of breakwater. |
| 97 | „ Algeria—Dellys | Lights altered. |
| 98 | „ Italy—Gulf of Naples—Cavallara Shoal | Destruction of beacon. |
| 99 | „ Malta—Valetta — Grand Harbour | Shoal off St. Elmo Point. |
| 100 | „ Cyprus — Famagousta Harbour | Buoy altered. |
| 101 | „ Egypt—Port Said | Alteration in lights in March. |
| 102 | Black Sea—Gulf of Burghaz | New light and alteration. |
| 103 | „ Sea of Azov — Petchany Light-vessel | Position. |
| 104 | Red Sea—Suez Bay—Kal-ah-Kebireh | Beacon re-erected on shoal. |
| 105 | „ Nubian Coast—Omm el Kurush | Reef north-eastward. |
| 106 | Indian Ocean—Madagascar | Various shoals discovered. |
| 107 | Bay of Bengal — Tenasserim Coast — Tavoy River—Reef Island | Arc of visibility of provisional light. |
| 108 | Eastern Archipelago—Sunda Strait—Great Merak Island | New light. |
| 109 | China Sea—Formosa Strait—Pescadores—Fisher Island | Fog-signal altered. |
| 110 | China—East Coast—Canton | River blocked. |
| 111 | „ East and N.E. coasts | Fog-signals at certain lighthouses. |
| 112 | „ „ Yang-tse-kiang — Block House Shoal | More shoal ground. |
| 113 | „ „ Shantung—S.E. Promontory | New light and fog-signal. |
| 114 | Japan — Yezo — Hiyoriyama (Skudutzs) Point | New light. |
| 115 | South Australia—Encounter Bay—Port Victor | New light on breakwater. |
| 116 | New Zealand—North Island—Waitara River | New harbour light and night signals. |
| 117 | „ Middle Island—Foveaux Strait—Waipapapa Point | New light. |
| 118 | United States — South Carolina — Charleston | New whistling buoy. |
| 119 | „ Massachusetts—Boston Harbour, Boston Light Station | Fog-signal altered. |

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## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

85.—ENGLAND.—*Entrance to the Thames.—Alexandra Channel.—Alteration of Buoyage.*—It is intended to alter the buoyage in the Alexandra channel about the end of March in the following manner, viz. :—A spherical buoy, painted in red and white horizontal bands and surmounted by staff and triangle, will be substituted for the present N.W. Shingles buoy ; and the West Shingles, Shingles Elbow, S.W. Shingles, and South Shingles buoys, will be altered from red can to red conical buoys.

86.—ENGLAND.—*West Coast.—Bristol Channel.—Bideford Low Light.—Extension of Illuminated Arc.*—With reference to Notice in 1882, it is intended on or about the 12th day of February, 1884, to extend the lateral range of Bideford Low light, so that it shall be shown one point more to the eastward than at present, and three points more to the westward. The full intensity of the light will show from the lighthouse on a bearing of W. to N.N.W. ¾ W.

87.—IRELAND.—*North Coast.—Lough Foyle Entrance.—Tuns Bank.—Eastern Buoy.—Alteration in Character.*—The bell buoy marking the eastern end of Tuns bank, north channel to Lough Foyle, has again broken adrift. Owing to the difficulty in maintaining the bell buoy in position, a second class conical buoy, painted red, has been substituted for it, and will mark the danger until further notice.

88.—NORTH SEA.—*Jutland.—West Coast.—Intended Light at Lodberg.*—In the course of the year 1884, a light will be exhibited from a lighthouse at Lodberg (Lodbjerg), northward of Agger, west coast of Jutland. It will be a *flashing* light, elevated 155 feet above the sea, and visible from a distance of about 18 miles. The lighthouse, constructed of granite, will be 115 feet high. Position, lat. 56° 49′ 25″ N., long. 8° 16′ 5″ E. Further notice concerning the character of this light, and the date of exhibition will be given in due course.

89.—NORWAY.—*South and West Coasts.*—On 1st December,

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1883, the following lights would be exhibited on the south and west coasts of Norway :—

(1.) *Grimstad Approach.—Light on Stangholmen.*—A quick *flashing red and white* light, visible seaward between the bearings of N. 31° W. (leading half a cable westward of Haakalboen) and N. 68° E. (leading well southward of Saleskjœr and Helleskjœr). Position, lat. 58° 18′ N., long. 8° 36′ E.

(2.) *Grimstad Approach.—Light on Haaven.*—A *fixed red* light, visible in the direction of Stangholmen, and about one point on each side of that line. It is situated 4 cables N. 39° E. from Stangholmen light, and kept in line with it, leads between Stenene and Haaboen, at the distance of half a cable from Haaboen.

(3.) *Grimstad Approach.—Light on Rivingen.*—A *fixed white* light, visible from Riving deep between Lille Haav (Lille Haa islet) and Maagholmboen; and in the direction of Gros, between Flade-Rivingen and Kraaga. It is situated 4½ cables N. 13° W. from Stangholmen light, and kept just open westward of it, leads about one cable westward of Grundsletta, and eastward of Haabogrund.

*Note.*—Approaching Grimstad at night—Stangholmen should be passed close on the starboard-hand, Rivingen light should then be brought a little on the starboard-bow to clear the spit of Lille Haav (with Rivingen light in sight, vessels are clear of Maagholm grund on the west side of the channel); having passed Lille Haav, steer towards Rivingen, which, having passed on the starboard-hand and being within the northern sector of Rivingen light, keep on the eastern side of the sector until past Flade-Rivingen, whence a course may be steered for the red light on Biodden, Grimstad.

(4.) *Christiania Fiord.—Light and Fog-Signal near Nœsodtangen Point.*—On Bo shoal, near Nœsodtangen (Nœs-odden or Ness) point, northern end of Christiania fiord, is a *flashing white* light, visible in the fairway of the channels northward and southward. Position, lat. 59° 52′ 15″ N., long. 10° 40′ E. During thick or foggy weather, a bell, placed on Nœsodtangen point, will be sounded *once every fifteen seconds.*

(5.) *Herlö Fiord.—Light on North Parisholm.*—Near the narrows southward of Sjellanger, is a *flashing white* light, visible in the fairway from a line leading eastward of Basholm and

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Jakobso with outlying shoals, through south, until obscured by South Parisholm. Position, lat. 60° 34′ 00″ N., long. 4° 59′ 20″ E.

The above-mentioned lights are shown from small wooden houses, and should be visible from a distance of about 8 miles; they will be exhibited annually from 15th August to 30th April; as these lights are not constantly attended to, care must be used when approaching them. *Variation*, 14¼° *W.*

90. Norway.—*West Coast.*—On 17th December, 1883, the following lights would be exhibited on the west coast of Norway:—

(1.) *Grötösund.—Leading Lights at Northern Entrance.*—The lights at the northern entrance to Grötösund (Grödösund) are *fixed red* lights, and kept in line lead in mid-channel between Kyllingen and Kyllingfluen, and northward of Helligholm islands (Helligholmoren).

*Positions.*—The outer light is placed on Andersoddon (Anders point), in lat. 67° 50′ 15″ N., long. 14° 50′ 15″ E.; the inner light is situated at Nordskot, and bears S.S.E. ½ E. from Andersodden light, distant 400 yards. *Variation*, 11½° *W.*

(2.) *Tiel Sund.—Light on Grœsholm.*—The light on Grœsholm (Grœsholmen) is a *revolving white* light, shown from the N.E. extreme of Stegel-holmen, northern entrance to Tiel sund; this light is visible between the bearings of N.E. by E., through west, and S.W. by W. (leading eastward of the shoal northward of Stegel-holmen). Position, lat. 68° 40¼′ N., long. 16° 39¾′ E. *Variation*, 10° *W.*

(3.) *Tromsö Sund.—Light on South Tonsnœs.*—The light on South Tonsnœs, entrance to Tromsö sund, is a *fixed white* light, visible between the bearings of N. ¾ E., through east, and S.W. ¾ W. (leading westward of the shoals extending off North Tonsnœs). Position, lat. 69° 44′ N., long., 19° 6′ E. *Variation*, 9¼° *W.*

The above mentioned lights, shown from small wooden houses, should be visible in clear weather from a distance of about 8 miles; they will be exhibited annually from 1st September to 14th April.

*Note.*—These lights are not constantly attended to.

91.—Baltic Entrance.—*The Kattegat.—Sweden.*—(1.) *Winga Island Lighthouse.—Alteration in Fog-Signal.*—With reference to

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Notice in 1883, the steam siren has been established, and will give, during thick or foggy weather, *three* blasts *every minute*—the first blast being of about *seven seconds'* duration, the other two of about *four seconds*, with an interval between the blasts of *four seconds*. Should the siren be out of order, two guns will be fired every quarter of an hour.

(2.) *Nidingen Rock Lighthouse.—Alteration in Fog-Signal.*—With reference to Notice in 1883, the siren has been established, and will give, during thick and foggy weather, one blast of about *seven seconds'* duration *every minute*.

92.—BALTIC.—*Sweden.—Kalmar Sund.—Provisional Light on Grimskär.*—In consequence of, and pending robuilding Grimskär lighthouse, the permanent light would be discontinued from some day in the first fortnight of January, 1884, for a period of about two months, during which time a *white* light of less power will be exhibited.

93.—BALTIC.—*Gulf of Finland.—Helsingfors Approach.—Leading Lights in Gustaf Sound.*—On 8th December, 1883, three leading lights would be exhibited in Gustaf (Gustafssvärd) sound, approach to Helsingfors from Gröhara holm; these three lights are *revolving white and red* lights, and are shown from the following positions. The northern light is placed on the fort at East Svartö (Stora Öster Svartö holm), western side of the sound; the second on the rock outside the rampart of Gustafsvärd castle, western side of the sound; and the third on the west side of Skanslandet holm, Bäkholmen (Alexandersö), east side of the sound. The two first-mentioned lights should be visible from a distance of about 5 miles, and kept in line lead clear of all shoals in the approach to Gustaf sound from the southward. The light on Bäkholmen is visible in Gustaf sound and well into Helsingfors road, but it is not seen, approaching from the southward, until past Öster ground.

*Note.*—These lights are not constantly attended to.

94.—BALTIC.—*Gulf of Finland.—Sveaborg Approach.—Light on Gröhara Holm.*—On 20th December, 1883, a light would be exhibited from a lighthouse erected on Gröhara holm, approach to Sveaborg. The light is visible through an arc of 309°, showing a *fixed red* light through an arc of 200°, or between the bearings of

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N.E. by E. ¾ E. and W. ½ S.; a single *red* flash of *one second* duration followed by an eclipse of *four seconds*, through an arc of 50°, or from N.E. by E. ¾ E. to N. by E. ¼ E.; a *fixed white* light (leading clear of all shoals) through an arc of 9°, or from N. by E. ¼ E. to N. ½ E.; and two successive *white* flashes, each of *one second* duration, followed by an eclipse of *four seconds*, through an arc of 50°, or from N. ½ E. to N.W. A faint light is seen through the remaining portion of arc (51°), or from N.W. to W. ½ S. The light, elevated 57 feet above the sea, should be visible from a distance of 11 miles. The lighthouse, of iron, circular in shape and painted red, stands on a granite base; the lantern roof and cupola are of copper unpainted. Position, lat. 60° 6′ 20″ N., long. 24° 59′ 45″ E. *Variation*, 4° *W.*

95.—MEDITERRANEAN.—*France.*— *Gulf of Saintes Maries.*—*Light at La Gacholle.*—On 1st February, 1884, a light would be exhibited from a lighthouse recently erected on the coast of Camargue, at the place named La Gacholle, northern shore of gulf of Saintes Maries. It is a *flashing white* light, with eclipses *every five seconds*, visible seaward through an arc of 60°, or between the bearings of N. 24½° E. and N. 84½° E.; elevated 57 feet above high water, and should be seen from a distance of 13 miles. The lighthouse, 51 feet high, is constructed of masonry, with keeper's dwelling adjoining. Position, lat. 43° 27′ 15″ N., long. 4° 34′ 10″ E. *Variation*, 14½° *W.*

96.—MEDITERRANEAN.—*Spain.*—*Port Aguilas.*—*Destruction of Breakwater.*—The breakwater at port Aguilas was completely destroyed during the gale of 20th December, 1883—the red light at the extremity of the breakwater was also washed away.

97.—MEDITERRANEAN.—*Algeria.*—*Dellys.*—*Alteration in Lights.*—On 15th February, 1884, the following alteration would be made in the lights at Dellys (Delhys). The fixed white light on Dellys point will be discontinued, and in lieu thereof, a light will be exhibited from iron supports (with shed) on the extremity of the wall on the pier in course of construction at that point; it will be a *fixed red* light, elevated 33 feet above high water (26 feet above the ground), and visible from a distance of about 5 miles. Position, lat. 36° 55′ 30″ N., long. 3° 55′ 15″ E. Also the colour of the

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light at the landing place, Dellys, would be altered from red to *green*.

98.—MEDITERRANEAN.—*Italy.—Gulf of Naples.—Cavallara Shoal.—Destruction of Beacon.*—With reference to Notice 59, p. 159, on the temporary discontinuance of the light on Cavallara shoal, southward of Gajola rock, west side of Naples bay, in consequence of damage sustained; the beacon on Cavallara shoal from which the light was exhibited, has been washed away during recent gales.

99.—MEDITERRANEAN.—*Malta.—Valetta.—Grand Harbour Entrance.—Shoal Ground extending eastward of St. Elmo Point.*—Vice-Admiral Lord John Hay, K.C.B., Commander-in-Chief on the Mediterranean station, reports the existence of less water on the rocky ledge extending eastward from St. Elmo point, northern side of entrance to Grand harbour, than is now shown on the charts. A pinnacle rock, with a depth of 33 feet, lies with St. Elmo point bearing N. 86° W., distant 280 yards—or 60 yards E. by S. from the 6 fathoms rock now shown on charts. Eastward of this pinnacle at the distance of about 20 yards, a depth of 6 fathoms with irregular bottom was found. The mark for leading eastward of Dragut rock—Ricasoli and Bighi points in line—leads over this part of the ledge. The passage over this ledge is not safe therefore for ships of deep draught during a Gregale (N.E. gale), or when there is a heavy sea running.

*Clearing marks.*—Isola point watch-tower open westward of the western shoulder of Corradino hill leads eastward of the ledge in 10 fathoms water; Tigne point lighthouse shut in by St. Elmo point leads southward of it. *Variation*, 10° W.

100.—MEDITERRANEAN.—*Cyprus.—Famagousta Harbour.—Alteration in Buoy at Entrance.*—The buoy marking the northern end of the reefs and shoal ground at the entrance to Famagousta harbour, has been placed in position (after having broken adrift); but the cage previously surmounting the buoy has been destroyed.

101.—MEDITERRANEAN.—*Egypt.—Port Said.—Intended Alteration in Lights.*—The following alteration will be made on 1st March in the lights at port Said, northern entrance to the Suez canal:—

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(1.) The light-vessel, now moored 1½ cable seaward of the outer extreme of the western breakwater which is awash, will be withdrawn; and in lieu thereof, a light will be exhibited from a beacon erected 110 yards seaward of the outer extreme of that portion which is awash, and in the same line of direction. The light will be a *fixed red* light.

(2.) The outer extreme of that portion of the western breakwater which is awash will be marked by a buoy carrying a *fixed white light*. This buoy will be moored in the line of direction of that portion of the breakwater which is awash, about 100 yards within the beacon with red light.

*Note.*—The two above-mentioned lights will be lighted by stored gas, Pintsch system.

102.—Black Sea.—*Gulf of Burghaz.*—(1.) *Light on Megalo Nisi Islet.*—With reference to Notice in 1883, on the intended exhibition of a light from a lighthouse then in course of construction on Megalo Nisi islet, south side of entrance to gulf of Burghaz (Bourgas or Pyrgos):—On 31st December, 1883, the light would be exhibited. It is a *fixed white* light, elevated 131 feet above the sea, and visible from a distance of 15 miles. Position approximate, lat. 42° 27′ N., long. 27° 44′ E.

(2.) *Anastasia Islet Lights.—Alteration in Arc of Visibility.*—On 31st December 1883, the following alteration would be made in the arc of visibility of the two vertical lights (fixed white) on Anastasia (Papas) islet, south side of gulf of Burghaz. These lights are obscured southward of a line leading clear of the shoal ground extending off cape Akin, south side of gulf of Burghaz.

103.—Black Sea.—*Sea of Azov.—Gulf of Azov.—Position of Petchany Light-vessel.*—This light-vessel is now moored in 26 feet water, on the south side of the fairway near the northern end of Cockerill shoal, and with the extremity of Krivaia (Krivoi) spit bearing N. 54½° W., distant 5½ miles. Position on Admiralty chart, lat. 46° 59′ 15″ N., long. 38° 15′ 30″ E.

*Note.*—Petchany light-vessel is placed at her station on the opening of navigation, and is withdrawn about 1st November; when withdrawn, a black perch with flag marks the position; should

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the fog-whistle on board this light-vessel be damaged, a bell will be rung for *ten minutes* with intervals of *five minutes*. *Variation, nil.*

104.—Red Sea.—*Suez Bay.—Kal-ah-Kebireh Shoal.—Beacon Re-erected.*—The beacon on Kal-ah-Kebireh shoal, which was blown down in 1882, has been re-erected.

105.—Red Sea.—*Coast of Nubia.—Reef North-Eastward of Omm el Kurúsh.*—The Commander of the British steam-vessel *Abington* reports the existence of a reef lying with Omm el Kurúsh bearing S.S.W. ¼ W., distant 2 miles. This reef (*Abington reef*), composed of coral, circular in shape, and about half a cable in diameter, shows above water. Position, lat. 20° 53½′ N., long. 37° 26½′ E.

106.—Indian Ocean.—*Madagascar.—West Coast.*—The following shoals have been recently reported :—

(1.) *Shoal N.W. of Antonga.*—Situated about 3 miles N.W. of Antonga. This shoal (*Osprey shoal*) has a depth of 2 fathoms, with 5 fathoms at the distance of about two cables to the northward, the water then deepening quickly to 10 fathoms ; it lies with the following bearings :—North extreme of Barlow island, N. 80° W. ; Sand island reef, N. 25° W. Position, lat. 20° 49′ 15″ S., long. 43° 59′ 20″ E. *Variation*, 16° *W.*

(2.) *Shoal N.W. of Belo.*—Lying about 7 miles N.W. of Belo :—This shoal (*Bawden shoal*), about 4 cables in extent, with a least depth of 2¼ fathoms, lies with the following bearings, or about 1½ mile N.N.W. of the 5½ fathoms given on chart :—Belo island (centre), S. 40° E. ; South extreme of Antonga cliffs, S. 20° W. ; Sandy knoll (on northern coral reef), N. 40° W. Position, lat. 20° 41′ S., long. 43° 55′ E.

*Note.*—On the eastern side of Bawden shoal the soundings agree with those shown on charts ; between the shoal and the sandy knoll on coral reefs, depths of 8 to 10 fathoms were found. *Variation*, 16½° *W.*

(3.) *Reef North-Eastward of Cape St. Andrew.*—Lying about 4 miles N.E. by E. from cape St. Andrew. This reef (*Dowding reef*), of apparently small extent, and steep-to on the northern side, with about 5 feet on it at low water, lies with the following bearings :—Villemassah (centre), S. 8° E. ; western extreme of

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land, S. 62° W. Position, lat. 16° 9′ 15″ S., long. 44° 31′ 00″ E. *Variation*, 18½° *W.*

*Note.*—From H.M.S. *Osprey*, Dowding reef could not be distinguished by any discolouration of the water.

107. — Bay of Bengal. — *Tenasserim Coast. — Tavoy River Entrance.—Reef Island Provisional Light.—Arc of Visibility.*— With reference to Notice in 1883, on the exhibition of a provisional light from a temporary wooden tripod—pending the construction of a lighthouse—on the N.E. point of Reef island, western side of entrance to Tavoy river ; the light, *fixed white*, is visible through an arc of 202½°, or between the bearings of N. 5½° E., through West, and S. 17° E. ; elevated 306 feet above high water, and should be seen from a distance of 12 miles. Position approximate, lat. 13° 35′ N., long. 98° 16′ E. *Variation*, 3° *E.*

108.—Eastern Archipelago.—*Sunda Strait.—Java.—Light on Great Merak Island.*—On 17th December, 1883, a light was exhibited on Great Merak island, eastern side of northern entrance to Sunda strait. It is a *fixed white* light, visible from a distance of 10 miles. Position approximate, lat. 5° 56½′ S., long. 105° 58½′ E.

*Note.*—A semaphore has also been erected on Great Merak island.

109.—China Sea.—*Formosa Strait.—Pescadores Islands.— Fisher Island Lighthouse.—Alteration in Fog-Signal.*—On 1st January, 1884, the following alteration would be made in the fog-signal at Fisher Island lighthouse, Pescadores islands. The signal is two guns, with an interval of *five minutes* between them ; when the signal has to be repeated, an interval of *ten minutes* will be allowed to elapse between the last gun of one signal and the first gun of the next.

110.—China.—*East Coast.—Blocking of Canton River.*—The Chinese Government has given Notice, that Canton river will be blocked below the city of Canton, a narrow passage only being left for steam-vessels.

111.—China.—*East and N.E. Coasts.—Fog-Signals at Certain Lighthouses.*—From 1st January, 1884, when there is occasion to repeat the fog-signal guns at the undermentioned lighthouses (at

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which no interval between the signals had previously been established), the time between the last gun of one signal and the first gun of the next, will be as follows :—

| | | *Interval between signals.* |
|---|---|---|
| High Lamock island lighthouse | ..... | *Twelve minutes.* |
| Chapel island | ,, ..... | *Ten* ,, |
| Ockseu islands | ,, ..... | *Twelve* ,, |
| Turnabout island | ,, ..... | *Ten* ,, |
| Middle Dog island | ,, ..... | *Fifteen* ,, |
| West Volcano islet | ,, ..... | *Ten* ,, |
| Gutzlaff island | ,, ..... | *Fifteen* ,, |
| North Saddle island | ,, ..... | *Ten* ,, |
| Shaweisham island | ,, ..... | *Fifteen* ,, |
| Shantung promontory | ,, ..... | *Ten* ,, |
| Chifu (Chefoo)—Kung-kung tau lighthouse | | *Eight* ,, |

112.—China.—*East Coast.—Yang-Tse-Kiang Entrance.—Shoal Ground Westward of Block House Shoal.*—With reference to Notice in 1883, on the existence of a shoal lying in the fairway of South channel, Yang-tse-Kiang, about $1\frac{6}{10}$ths mile N.N.E. of Kiu Toan beacon :—The following further information, the result of an examination of the locality, has been received from H.M. surveying vessel *Flying Fish*. A strip of shoal ground lying parallel with the course of the river and about 3 cables in breadth, has formed about 5 cables westward of Block House shoal. The outer extreme of this strip lies with Kiu Toan beacon bearing W. ½ N., distant $2\frac{3}{10}$ths miles; the shoal ground extends thence in a N.W. ½ N. direction for a distance of about 5½ miles, or to a position with Kiu Toan small beacon bearing W. by S., distant 3 miles. The depths on this shoal ground (sand) are 2½ to 3 fathoms at low water ordinary spring tides. In the outer portion of the channel between this shoal ground and Block House shoal, the depths are 4 to 5 fathoms, but abreast the red buoy of Block House shoal the soundings decrease to 3¼ fathoms, and at one mile above the buoy to 2¾ fathoms. South channel—westward of this newly formed shoal ground—is thus reduced in breadth to about 8 cables, and has depths of 4 to 5 fathoms, over mud and sand. *Variation*, 2¼° *W.*

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113.—China.—*East Coast.—Shantung.—Light and Fog-Signal on S.E. Promontory.*—On 28th November, 1883, a light was exhibited from a lighthouse erected on S.E. promontory, eastern side of Shih-tau bay, Shantung. It is a *flashing white* light, showing flashes at *half-minute* intervals; elevated 96 feet above the sea, and visible from a distance of about 16 miles. The lighthouse, 77 feet high, constructed of iron and circular in shape, is painted red and white in horizontal bands; the keeper's dwellings and boundary wall are white. Position approximate, lat. 36° 54′ N., long. 122° 31′ 45″ E. A fog-signal has been established at S.E. promontory lighthouse; the signal is a first class siren, which, during thick or foggy weather, will give a blast of about *four seconds'* duration at intervals of *one and a-half minute.*

114.—Japan.—*Yezo.—Iskarri Bay.—Light on Hiyoriyama (Skudutzs) Point.*—On 15th October, 1883, a light would be exhibited from a lighthouse erected on Hiyoriyama (Skudutzs) point, about 2½ miles northward of Otaru anchorage, west coast of Yezo island. It is a *fixed white* light, visible seaward through an arc of 239°, or between the bearings of S. 66° E. and N. 7° W., elevated 162 feet above the sea, and should be seen from a distance of 17 miles. The lighthouse, 33 feet high, is constructed of wood and painted white. Position approximate on Admiralty chart, lat. 43° 14′ N., long. 141° 1′ E. *Variation*, 6° *W.*

115.—South Australia.—*Encounter Bay, Port Victor.—Light on Breakwater.*—On and after the 31st December, 1883, there will be exhibited a *fixed white* light at the end of the breakwater, Port Victor. The light will be shown from a tripod, at an elevation of 26 feet above high water level, and should be seen on approaching from seaward at a distance of about 5 miles. Vessels from the westward should not haul up for the moorings until the light bears N.W. by N., so as to be certain of having passed the Seal rock.

116.—New Zealand.—*North Island.—West Coast.—Waitara River Entrance.—Harbour Light and Night Signals.*—On 1st January, 1884, the undermentioned harbour light and night signals would be established at Waitara river entrance:—



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The *Harbour light* shown from a flagstaff on south side of the river entrance, is a *fixed white* light, elevated 70 feet above the sea.

*Night Signals from Shore.*—"*Wait till daylight*," *red* light on beacon erected seaward of the flagstaff, shown from sunset to sunrise when the bar is practicable. "*Bar dangerous*," *green* light, in lieu of red, on the beacon seaward of flagstaff, shown when the bar is unsafe to cross, "*Keep to sea, or put to sea*," two *white* lights (one of which is the harbour light) horizontal on flagstaff, with a *green* light between them; to be used for ships at anchor or approaching. "*Take the bar*," a *red* and a *green* light on separate set of inner beacons, the green light seaward; these two lights, however, will only be shown when the tide serves; whilst the light on beacon seaward of flagstaff denotes whether the bar is safe.

*Night Signals from Ships.*—"*Will till daylight*," two lights vertical: upper, *white;* lower, *red.* "*Cannot wait*," two lights vertical: upper, *red;* lower, *white.* "*Cannot keep, or put to sea*," two *white* lights horizontal, with a *green* light between them.

*Note.*—In all cases of beacon lights on shore, of whatever colour, the lights will be so arranged as to serve for leading lights; the beacons being shifted in accordance with the shifting of the channel. Masters of vessels must, however, in all cases use their own judgment as to whether they will enter the river or not. Vessels crossing the bar inwards at night must be careful to keep the harbour light and the seaward beacon light in line until the red and the green lights on the inner set of beacons are in line, when the course must be altered quickly in that direction; the vessel will then be inside the bar, when the master must be guided by the banks of the river. The signal—*Bar dangerous*—means either that the bar is rough, a strong fresh running out, or that there is not sufficient water on the bar.

117.—NEW ZEALAND.—*Middle Island.—Foveaux Strait.—Light on Waipapapa Point.*—With reference to Notice 77, p. 165, on the intended exhibition of a light on Waipapapa point, north side of eastern entrance to Foveaux strait, on 1st January, 1884, the light would be exhibited from a lighthouse recently erected on the point. It is a *flashing white* light, showing a flash *every ten seconds*, elevated 70 feet above the sea, and visible from a distance of about 13

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miles. The lighthouse, 44 feet high, is painted white. Position, lat. 46° 39′ 40″ S., long. 168° 52′ 30″ E,

118.—UNITED STATES.—*South Carolina.—Whistling Buoy off Charleston.*—On and after February 10, 1884, a whistling buoy will be moored about one mile outside the bar in the main ship-channel into Charleston, in place of the first-class can buoy now there; this buoy will be painted with black and white perpendicular stripes, and marked with the letter C; it will be surmounted by a whistle operated by the action of the sea, and giving 20 to 30 blasts per minute; Fort Sumter bears N.W. by N., and Morris island beacons in range, W.N.W. ½ W., from this buoy.

119.—UNITED STATES. — *Massachusetts.—Boston Harbour.—Change in Characteristic of Fog-Signal at Boston Light-Station.*—On and after February 10, 1884, instead of the Daboll trumpet, there will be sounded, in thick and foggy weather, at the Boston light-station a 10-inch steam-whistle, giving two blasts of 5 seconds' duration per minute at alternate intervals of 10 and 40 seconds; thus: blast, 5 seconds; interval, 10 seconds; blast, 5 seconds; interval, 40 seconds.

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## OUR OFFICIAL LOG.

OFFICIAL RETURN OF BRITISH WRECKS IN JANUARY, 1884.—The number and tonnage of British vessels respecting whose loss reports were received at the Board of Trade during the month of January, 1884, and the number of lives lost are as follow:—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing ..... | 88 | 18,029 | 187 |
| Steam..... | 17 | 7,693 | 63 |
| Total ..... | 105 | 25,722 | 250 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in January, relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels,



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and the lives lost by such casualties are not included.—THOMAS GRAY, Assistant-Secretary, Marine Department.—Board of Trade, 4th February, 1884.

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HER MAJESTY'S GOVERNMENT have awarded a gold medal to to Señor Don Julian de Salazar y Garaigorta, President of the Portugalete Society, for saving life at shipwrecks; and silver medals to Don Gabriel Egusquiza y Cien Fuegos, Don Sebastian Urquijo y Zaballa, and Don Tomas Lavena y Llano, coxswains of three lanchas belonging to Portugalete, in recognition of their gallant conduct in rescuing, at the risk of their lives, the crew of the British s.s. *Isle of Bute*, wrecked on Bilbao Bar on December 11th, 1883.

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THE Board of Trade have awarded their silver "Humanity" medal to Captain William Gleig, master of the s.s. *Missouri*, of Liverpool, in recognition of his kindness and humanity to the shipwrecked crew of the brigantine *Jessie*, of Liverpool, whom he rescued from their vessel when sinking, off Newfoundland, on the 17th November last.

The Board have also awarded their silver "Gallantry" medal to Francis Potts, first mate, and their bronze medal and a sum of money to each of the following seamen of the *Missouri*, who, with the mate, manned the boat which effected the rescue, viz:—

Robert Wilson, Patrick Redmond, John Johnson, James Crockwell, Joseph Asbury, James Connolly, and Peter Theelens.

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HER MAJESTY'S GOVERNMENT have awarded to Captain W. M. Glad, of the barque *Mindex*, of Moos, Norway, a binocular glass, in acknowledgment of his humanity and kindness to the shipwrecked crew of the barque *Clifton*, of Liverpool, which was abandoned at sea on the 7th of October last.

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THE Board of Trade have awarded their silver "Humanity" medal to Captain Alexander Ritchie, master of the steamship *State of Pennsylvania*, of Glasgow, in recognition of his kindness and

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humanity to the shipwrecked crew of the barque *Benefactress*, of Greenock, whom he rescued from their vessel when waterlogged, and almost a complete wreck in mid-Atlantic on the 28th November last.

The Board of Trade have also awarded their silver "Gallantry" medal to George Dunlop, second mate, and their bronze medal and a sum of money to each of the following seamen of the *State of Pennsylvania*, who with the second mate manned the boat which at great risk effected the rescue, viz. :—

Malcolm McDonald, Michael Davany, John Fife, James Heron, William Hunter, Philip Curley, and Robert Johnson.

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The Board of Trade have received, through the Secretary of State for Foreign Affairs, a gold watch, which has been awarded by the Government of the United States of America to Captain John Cook, of the barque *Silurian*, of London, in recognition of his humanity in rescuing the crew of the American ship *Oracle*, wrecked on Herschel Island, March 7th, 1883.

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The Board of Trade have awarded a binocular glass to Captain J. Grossi, of the Italian ship *Emma C.*, of Genoa, in recognition of his humanity and kindness in rescuing the crews of the British ships *St. Andrew's Castle* and *Galatea*, which foundered through collision with each other in the Bay of Biscay on the 15th November last.

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The Board of Trade have received through the Foreign Office a binocular glass, which has been awarded by the Emperor of Germany to Captain Arkley, master of the British steamship *Redesdale*, in recognition of his services in rescuing the crew of the Hamburg steamship *Claudius*, when the latter vessel was run down by an unknown steamer off Cape Secratiff on the 2nd September last, and of the kindness with which they were treated on board his vessel.

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The Board of Trade have awarded their Silver Medal for Humanity in Saving Life at Sea to Captain William Thomson,

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master of the ship *Medea*, of Greenock, in recognition of his humane and praiseworthy service to the shipwrecked crew of the barque *Lauderdale*, of Liverpool, whom he rescued at sea on the 28th January last.

The *Lauderdale* had encountered the full force of a hurricane, which had completely wrecked her, and was in a sinking condition when the *Medea* hove in sight. Notwithstanding the heavy weather which was prevailing, a boat was launched from the *Medea* with the view of taking off the shipwrecked crew, but when within one hundred and fifty yards from the *Lauderdale*, the boat was capsized by a heavy sea, and its crew, consisting of the chief mate, Mr. Reuben Jeffery, and four hands, were all drowned.

The *Medea* then stood by the wreck until the next morning, when the weather having moderated, the crew of the *Lauderdale* abandoned their vessel, and proceeded in their own boat to the *Medea*.

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### Official Inquiries at Home, 1884.

2043. *Grecian*, ship; built at Dundee in 1867; owned by Mr. A. Mills and others; tonnage, 272; Philadelphia to Oporto; grain; abandoned at sea, November 15, 1883. Inquiry held at Dundee, January 5, 1884, before Guthrie and Edward, Justices; French and Vaux, N.A. Abandonment justifiable.

2044. *White Star*, ship; built at St. John's, N.B., 1854; owned by The Merchants' Trading Company, Limited; tonnage, 2,097; Calcutta to Liverpool; jute cuttings; lost on the Tuskar Rock, December 24, 1883. Inquiry held at Liverpool, January 11, 1884, before Raffles, Judge; Castle and Pattison, N.A. Casualty caused by the Tuskar light not having been seen in consequence of fog; and no signal rockets having been used. Master acquitted of default.

2048. *Cornwall*, s.s.; built at Wallsend, 1872; owned by Messrs. M. Thomas and Co.; tonnage, 567; St. Nazaire to Cardiff; ballast; lost on La Plotte Rock, Coast of France, December 18, 1883. Inquiry held at Cardiff, January 14, 1884, before Jones, Judge; Parfitt and Davies, N.A. Master in default for inattention to steering. Certificate suspended for three months.

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2049. *Band of Hope*, ketch, and *Wydale*, s.s.; the former built at Topsham, 1860; owned by Mr. C. F. Williams; tonnage, 40; Hurst to Plymouth; cement; the latter built at South Shields, 1882; owned by Mr. P. Hick and others; tonnage, 1,271; Havre to Cardiff; water ballast. In collision off Prawl Point, December 18, 1883, when loss of life ensued. Inquiry held at Westminster, January 10, 1884, before Rothery, Wreck Commissioner; Hight, Ronaldson and Grant, N.A. Master of *Wydale* in default for not keeping a good look-out when in charge of deck. Certificate suspended for three months.

2054. *Bolivia*, s.s.; built at Port Glasgow, 1874; owned by the Barrow Steamship Company, Limited; tonnage, 2,625; Glasgow to New York; general cargo; stranded on Skelmorlie Bank, and subsequently beached, December 22, 1883. Inquiry held at Glasgow, January 18, 1884, before Mowat and Reed, Justices; Beasley and Hyde, N.A. Master to blame for navigating his vessel in too close proximity to a well-known danger; but considering that he was guilty of an error of judgment rather than of neglect, and having regard to the high character which he bears, his certificate was not dealt with.

2055. *South of Ireland*, s.s.; built at Renfrew, 1867; owned by Great Western Railway Company; tonnage, 214 net; Cherbourg to Weymouth; general cargo; lost near Warborough Head, December 25, 1883. Inquiry held at Westminster, January 18, 1884, before Rothery, Wreck Commissioner; Comyn and Harland, N.A. Master in default for proceeding at full speed in a dense fog. Certificate suspended for three months; recommended for one as mate.

2058. *Liverpool*, barque; built at Quebec, 1855; owned by Mr. J. Hall and others; tonnage, 1,454; Quebec to Greenock; timber; lost in Finnard Bay, Lough Ryan, December 12, 1883, when loss of life ensued. Inquiry held at Newcastle-on-Tyne, January 22, 1884, before Rothery, Wreck Commissioner; Curling and Kiddle, N.A. Loss due to violence of gale of wind.

2059. *Cherubini*, s.s.; built at Sunderland, 1880; owned by Mr. J. Taylor and others; tonnage, 1,161; Sunderland to Genoa; coals; supposed to have foundered at sea. Inquiry held at Newcastle-on-

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Tyne, January 23, 1884, before Rothery, Wreck Commissioner; Curling and Kiddle, N.A. When leaving Sunderland she was in good and seaworthy condition, but very deeply laden. No evidence as to cause of loss.

2060. *Darjeeling*, ship; built at Southampton, 1881; owned by Mr. E. P. Bates and others; tonnage, 1,941; Cardiff to Calcutta; coals; supposed to have foundered at sea. Inquiry held at Liverpool, January 23, 1884, before Raffles, Judge; Knox and Wilson, N.A. No evidence forthcoming as to cause of loss.

2062. *Beatrice*, s.s.; built in 1879; owned by Mr. T. Turnbull and others; tonnage, 834; Cardiff to Odessa; patent fuel; lost near Galita Island, December 18, 1883. Inquiry held at Middlesborough, January 25, 1884, before Coleman, Judge; French and Anderson, N.A. Master in default for setting improper courses after sighting the Island. Certificate suspended for four months.

2063. *Shamrock*, s.s.; built at Dundee, 1883; owned by the Steamship Shamrock Company, Limited; tonnage 524; Dublin to Newport (Mon.); ballast; lost near St. Anne's Head, Pembrokeshire, December 25, 1883. Inquiry held at Liverpool, January 25, 1884, before Raffles, Judge; Parish and Forster, N.A. Master to blame for proceeding at full speed in a dense fog, and without using the lead, and for neglecting to anchor when in his power to do so. Certificate suspended for six months.

2064. *Bentuther*, barque; built at Sunderland, 1863; owned by Mr. J. Sproat and others; tonnage, 306; Havre to Liverpool; ballast; lost on Coast of Wales, January 2, 1884. Inquiry held at Liverpool, January 28, 1884, before Raffles, Judge; Castle and Vaux, N.A. Master to blame for neglecting lead, and making no allowance for tide. Certificate suspended for six months.

2067. *Lochness*, s.s.; built at Glasgow, 1882; owned by Dundee Loch Line Steam Shipping Company; tonnage, 665; Libau to Leith; grain; stranded on Montrose Sands, January 5, 1884. Inquiry held at Leith, January 31, 1884, before Wilson and Wilkie, Justices; Beasley and Hyde, N.A. Accident caused by master mistaking the light at Montrose-ness for that on St. Abb's Head.

2068. *Ardentinny*, barque; built at Dumbarton, 1870; owned by Mr. J. C. Peacock; tonnage, 377; Glasgow to San Francisco,

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coals; supposed to have foundered at sea. Inquiry held at Glasgow, January 31, 1884, before Lamberton and Marshall, Justices; Harland and Moresby, N.A. Ship in perfect condition when leaving the Clyde, having proper arrangements for ventilation and for ascertaining the temperature of the cargo. No evidence as to cause of loss.

2069. *Duke of Westminster*, s.s.; built at Barrow-on-Furness, 1882; owned by Eastern Steamship Company, Limited; tonnage, 2,426; Brisbane to London; general cargo; stranded on Atherfield Ledge, Isle of Wight, January 3, 1884. Inquiry held at Westminster, January 31, 1884, before Rothery, Wreck Commissioner; Hight and Ronaldson, N.A. Master in default, for steering a too northerly course after passing the Start, and for proceeding at too great a speed in thick weather without taking steps, by lead or otherwise, to ascertain his true position. Certificate suspended for six months; recommended for one as mate.

2070. *Aludra*, s.s.; built at Sunderland, 1879; owned by Mr. R. H. Penney and others; tonnage, 966; Hamburg to Cardiff; water ballast; stranded near Texel Island, December 12, 1883. Inquiry held at Westminster, January 30, 1884, before Rothery, Wreck Commissioner; Hight and Ronaldson, N.A. Stranding due to violence of gale. Master took the proper course in heading her for the land instead of allowing her to drift broadside on to the shore.

2072. *Inchclutha*, s.s.; built at Low Walker, 1879; owned by Mr. R. Fraser and others; tonnage, 1,293; Calcutta to United Kingdom; wheat; supposed to have foundered at sea. Inquiry held at Westminster, February 5, 1884, before Rothery, Wreck Commissioner; Pickard and Robinson, N.A. Ship in good and seaworthy condition when leaving Calcutta. No evidence as to cause of loss.

2073. *Princess*, s.s.; built at Hull, 1869; owned by Mr. W. S. Bailey and others; tonnage, 939; Fiume to London; general cargo; stranded at Lydden Spout, near Dover, January 3, 1884. Inquiry held at Westminster, February 1, 1884, before Rothery, Wreck Commissioner; Comyn and Davies, N.A. Pilot in charge in default, for having laid a course too close to land, and for running at full speed in a dense fog.

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2074. *Glenrosa*, barque, built at Sunderland, 1864; owned by Mr. R. Roberts and others; Cardiff to Buenos Ayres; coals; abandoned at sea, October 23, 1883. Inquiry held at North, Shields, January 30, 1884, before Adamson and Cleugh, Justices; Parfitt and Pattison, N.A. Abandonment justifiable.

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OFFICIAL INQUIRIES ABROAD, 1883-4.

2041. *Salerno*, s.s.; stranded on Northern Two Kayes, October 28, 1883. Inquiry held at Belize, British Honduras, November 15, 1883. Casualty caused by the action of an unknown current. Master entirely exonerated from blame.

2042. *Mary Barbara*, brigantine; stranded near Rio Grande de Sul. Naval Court held at Macero, December 4, 1883. Master misled by chronometer, the rating of which he had been unable to correct.

2045. *Gilsland*, s.s., and *Netley Abbey*, s.s.; in collision off Valetta Harbour, December 11, 1883. Inquiry held at Malta, December 13, 1883. Both masters in default, but considering that a third vessel was close upon them and absorbed much attention, their certificates were not dealt with.

2046. *Ethelred*, s.s.; stranded on Ryggen Reef, off Hoganas, Sweden, November 28, 1883. Naval Court held at Copenhagen, January 3, 1884. Casualty due to strong current caused by extraordinary gale. Master exonerated from blame.

2047. *Mary*, schooner; lost in the Cove, Eleuthera, September 8, 1883. Inquiry held at New Providence, September 29, 1883. Master free from blame. Loss due to hurricane.

2050. *Proteus*, s.s.; crushed by ice in Smith's Sound, July 23, 1883. Inquiry held at St. John's, Newfoundland, December 4, 1883. Master free from blame.

2051. *Sussex;* stranded in entering the port. Naval Court held at Rio Grande do Norte, December 12, 1883. Master should have taken a pilot. Certificate not dealt with.

2052. *Tweed*, s.s.; stranded off Nyhaum, Swedish coast, December 11, 1883. Naval Court held at Copenhagen, January 10,

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1884. Master in default for neglecting the lead, and for making no allowance for current. Certificate suspended for three months; recommended for one as mate.

2053. *Britannia*, ship; *Sokoto*, barque; in collision off Troedjoe Islands, November 1, 1883. Inquiry held at Singapore, November 15, 1883. Mate of *Sokoto* in default for not giving way to the ship when close-hauled, he having the wind free. Severely censured.

2056. *Royalist*, schooner; stranded on Mangre Kaye Reef, October 26, 1883. Inquiry held at Belize, British Honduras, November 19, 1883. Accident due to slight error of judgment.

2057. *Burnley*, s.s., stranded in harbour of Belize, October 22, 1883. Inquiry held at Belize, British Honduras, November 8, 1883. Casualty due to error of judgment on part of pilot. Master free from blame.

2061. *Rockhurst*, ship; jettisoned cargo in consequence of coals having taken fire by spontaneous combustion. Inquiry held at Port Elizabeth, December 5, 1883. Master commended for his prompt action.

2065. *Severn*, s.s.; damaged by explosion at Carthagena, November 18, 1883. Naval Court held at St. Thomas, January 7, 1884. First engineer to blame for neglecting to report the state of engines and boilers. Certificate suspended for three months. The certificate of the second engineer was also suspended for three months for his conduct before the Court in grossly prevaricating and endeavouring to screen other persons.

2066. *Kate Irving*, barque; stranded at Port Adelaide, November 20, 1883. Inquiry held at Port Adelaide, November 28, 1883. Accident caused by the bad steering qualities of vessel. Pilot in charge free from blame.

2071. *Princess Louise*, ship; lost near Point Prim, Digby County, Nova Scotia, December 3, 1883, when loss of life ensued. Inquiry held at Halifax, U.S., December 15, 1883. Loss due to the parting of the hawser whilst in tow: the ship having no sails bent, drifted helplessly on the rocks.

2075. *Southern Cross*, s.s., and *Rescue*, steam-tug; in collision in River Yarra, November 7, 1883. Inquiry held at Melbourne,

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November 16, 1883. Casualty due to *Southern Cross* proceeding at too great a speed.

2076. *Nell*, s.s.; lost at Gabo Island, November 1, 1883. Inquiry held at Melbourne, November 11, 1883. Master in default for taking ship to sea in an unseaworthy condition, namely, in not being properly found in ground tackle. Certificate suspended for three months.

2077. *Rodondo*, s.s.; stranded on Victory Shoal, November 6, 1883. Inquiry held at Melbourne, December 4, 1883. Court not in a position to charge master with wrongful act or default.

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## GENERAL.

BOILERS OF H.M.S. "COLOSSUS."—In the *Engineer* for February 8, 1884, are given drawings of these boilers; and the editor favours his readers with the following observation thereupon, viz.:—"These boilers are oval, single ended, and have each three furnaces. They are of an excellent type, which would not be passed for the Mercantile Marine by the Board of Trade, because the sides are flat and stayed like the ends." This statement is quite of a piece with other statements made not long since by our valued contemporary. Do they arise from pure and unadulterated ignorance on the part of the editor and his advisers, or are they designed with a view to call forth comment and contradictions, or to furnish little paragraphs in speeches during the forthcoming discussions? We are loth to assume that our contemporary is ignorant of the facts, and we certainly deny that he would insert these statements knowing them to be wrong. As a matter of fact, the Board of Trade surveyors have passed boilers like these for many years, and pass them now. How and why then should a misstatement so deliberately opposed to fact as this is, find its way into print? It will be curious to note whether in the forthcoming discussion this statement, like others equally true, though not equally new, will be reproduced by any speaker as if it were true.

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TIERRA DEL FUEGO.—MISSION STATION AT OOSHOOIA, BEAGLE CHANNEL.—Representation having been made by the South American Mission Society in London, as to the advantages offered by their station at Ooshooia (Ushuwia), in Beagle Channel, as a place of refuge to the crews of vessels wrecked or abandoned in the vicinity of Cape Horn; the information (originally given in 1871) is now amended, and published with particulars in reference to the natives:—The Mission Station, Ooshooia, is established on the North shore of Beagle Channel, Tierra del Fuego, in the cove of a small peninsula N. by E. from the Murray Narrows or northern entrance to Ponsonby Sound, and which may be used as a place of refuge and relief to mariners shipwrecked in the vicinity of Cape Horn. If a ship be abandoned to the westward of Cape Horn, the most direct course for boats is, to pass eastward of False Cape Horn and through Ponsonby Sound, using Packsaddle Island for a stopping place. For crews escaping when to the eastward of Cape Horn, the best course would be to the eastward of Navarin Island, and westward through the Beagle Channel; stopping, if necessary, at Banner Cove in Picton Island, or at the Narrows of Beagle Channel, where, on the south shore, friendly natives are settled, and from which the Mission is distant about 30 miles. Mr. Bridges, of the South American Mission, resident at Ooshooia, reports in August, 1883, that the natives of Ponsonby Sound may be as safely trusted as those of other parts, and that they would be ready to pilot any shipwrecked men to Ooshooia. Further, that a great change has been effected in the character of the natives generally, and that the Yahgan natives from Cape San Diego to Cape Horn, and thence round to Brecknock peninsula can be trusted. The position of the Mission settlement is in lat. 54° 53′ S., long. 68° 12′ W.

FRANCE.—NORTH COAST.—DUNKERQUE.—PILOTS.—Since August 1, 1883, the pilot fleet of Dunkerque consists of five vessels, three of which are kept constantly at sea, in or near the following localities:—One on the English coast between Dungeness and Dover. One near the Ruytingen light-vessel, between the banks of Ruytingen and Dyck. One in the neighbourhood of Gravelines

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and the Dyck light-vessel. These vessels will have the word DUNKERQUE in large *black* letters, over a large *black* anchor, on their sails.

SOUTH FORELAND.—LIGHTHOUSE ILLUMINANTS.—Mariners navigating between the Channel and the Thames entrance should be on their guard lest they mistake the experimental lights about to be exhibited at the South Foreland for the permanent lights shown from that point. Notices have already been issued by the Trinity House indicating generally the nature of the temporary lights, as may be seen on reference to our monthly lists, and a further announcement is promised. We understand that the temporary lights are likely to be irregularly exhibited for some months, in order that continuous observations may be made in varying conditions of the atmosphere.

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## MERCHANT SHIPPING LEGISLATION.

(*Continued from January Number, page* 80.)

BUT there is, on the other hand, another course which we may take. When you want to compel a man to act in a particular way, there are two distinct principles on which you may proceed, and the two are not wholly consistent with each other. You may prescribe in detail the precise course you desire him to take, and you may employ somebody to see that he takes that course, with power to stop him when he deviates from it; or you may indicate the result you require, and make it his interest to find out for himself and follow the course which will lead to that result. The former is the course which must be taken with children, madmen, and irresponsible persons, and is in some other cases inevitable and justifiable. But the other is the course we usually pursue with rational people, and, where it is possible, it is obviously both the easier and the more efficient course. We want the shipowner to bring his ship safe to port. We may tell him what he must do in order to effect this, and set somebody to watch him to see that he does it.

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Or we may make it his interest to bring his ship safe to port, and leave it him to find the best means of doing so. What we are attempting at present is a half-hearted way of trying the former course, and it has failed. But how about the other? If it can be shown that our law as it at present stands not only does not make it the shipowners interest to bring his ship back safe, but tempts him so to conduct his business as to make it his interest that she shall be unsafe, and protects him when he has done so, it will follow that we have hitherto neglected by far the most powerful means which the State can use to make ships safe; and that the law, whilst nibbling at preventive measures, is really promoting and encouraging loss of property and of life.

Self interest operates in two ways, by the fear of loss or suffering and by the hope of gain. Under our present law the bad shipowner is enabled and encouraged not only to free himself from any apprehension of loss or suffering if his ship is wrecked, but to make that wreck a means of gain.

The loss may be two-fold. It may be a loss which the shipowner incurs in consequence of the injury which his miscarriage inflicts upon others, in other words "liability;" or it may be the loss of his own profit or his own property. The liability again may be either "criminal," that is, a penalty or punishment which the law imposes upon him for having committed an injury to others amounting to a crime; or it may be "civil," that is, an injury for which the injured party has a right to recover damages from the injurer.

Let us first see how far the guilty or negligent shipowner is really subject to criminal liability.

It is possible that at common law an owner who should knowingly and wilfully send a ship to sea in such a state that he might expect her to founder and drown her crew would, in the event of loss of life occurring, be guilty of manslaughter; but by an Act of 1871, the sending a ship to sea in such an unseaworthy condition as to endanger life was expressly made a crime, unless the accused could show that he had used all reasonable means to keep her seaworthy; and this enactment, with slight alterations, was re-enacted in 1875 and 1876.

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Several prosecutions have been instituted under it, and more have been directed. A few convictions have been obtained in minor cases, more especially, to the credit of Irish Courts be it said, in Ireland. But in most of the cases, and in the more important and flagrant cases, the Act has broken down altogether. The causes of this seem to have been—

1. The difficulty of bringing home intention to the owner, the really guilty party. He is almost always able to shield himself under the acts of some one for whom he is not responsible. Thus in one flagrant case of overloading an owner and his nephew were partners; the uncle was the sole owner of the ship, and never went near her, whilst the nephew was present at the loading. The judge at once directed an acquittal. Modern business is so extended, and the proportion of it done through agents is so large, that it is seldom easy to prove any criminal act to be the act of the real principal in such a sense as to satisfy a court of justice. If there is really a criminal intention nothing is easier than to conceal it. A shipowner who wishes to overload may give his captain express orders to load fairly; but the captain may at the same time very well understand that unless he earns a large freight he will lose his place.

2. The difficulty of proving unseaworthiness to a jury—possibly prejudiced—and a judge who scarcely knows the stem of a ship from the stern. Both are naturally puzzled by the conflict of so-called expert evidence, of which money can procure any quantity.

3. The state of our law of evidence, which prevents the prosecution from bringing forward facts which satisfy every reasonable man of the probable guilt of the accused. Thus the finding of the Wreck Commissioner's Court; the practice of habitual overloading; the fact that the vessel was habitually and purposely over-insured; are excluded in a criminal prosecution. In one, perhaps the most flagrant of all the cases, that of a ship which was lost, with all hands, there was a letter from the captain to his father, expressing his opinion that the ship was overladen and undermanned, and his apprehension that his wife would be made a widow; but this, though admitted in the Wreck Commissioner's Court, was inadmissible in a criminal prosecution. No evidence that could have

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been produced would have had a more direct bearing on the question at issue.

4. Lastly, the fact that the Board of Trade has power to detain is itself fatal to any system of prosecution. "If," so the lawyers argue, "the Board of Trade and its officers did, or could, or might have seen this ship and have detained her, the owner is freed from criminal responsibility." As if the eyes of the Board of Trade could be everywhere night and day, and as if a murder was less a murder because a policeman had seen it and had not prevented it! And yet these are grounds on which judges have directed and will direct acquittals in cases where, to the eyes of an expert, the criminal negligence of the owner is as clear as daylight. Such decisions, though they follow naturally enough from the present state of the law, have probably done more to drown seamen than all the Acts passed by the Legislature have done to save them. They constitute an adoption and publication by authority of the principle that the responsibility, so far as criminal law is concerned, is by the powers given to the Board of Trade shifted from the shoulders of the shipowner; and thus it may be doubted whether the provisions of the recent Acts, which were intended to save life, have not by diminishing the responsibility of the shipowner, had an indirect effect contrary to that which the Legislature intended; and whether the recent increase in the loss of life may not in some cases and to some degree be due to this unexpected effect of recent legislation. In fact, by the action of the courts of law, to which the ultimate decision of these cases is intrusted, both forms of remedy may be rendered inoperative. If the Board of Trade stop a ship which they think unseaworthy, they are not only defeated, but held liable in damages. If they let her go and prosecute her owner, they are told that the owner cannot be guilty because they might have stopped her.

But however this may be, there can be no doubt that the enactments by which it was intended to punish criminal negligence on the part of the shipowner have failed. Nor is there much hope that they can be made effectual. To admit all the evidence which really proves the case; to infer criminal intention without distinctly proving it; to give judges and juries sufficient knowledge



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to enable them to appreciate the value of expert evidence; to exclude the presumptions of innocence which the courts raise from the existence of inefficient administrative supervision; are changes in the law which it would be idle to hope for; and without such changes criminal proceedings will be a rotton reed to lean upon.

Next let us see what is the civil liability of the shipowner.

At common law, if the ship were lost by the negligence or want of care of the shipowner or his servants, he would be liable to the whole extent of his fortune for injury sustained by passengers or goods carried in his ship; and by Lord Campbell's Act this remedy was extended to the families of passengers who might be lost.

The crew of the ship had at common law practically no such remedy. But by the Act of 1876 the master and crew and their families have a civil remedy against the owner if loss arises from the neglect of the owner to make and keep his ship seaworthy.

Again, at common law, as amended by Lord Campbell's Act, the shipowner was liable to the whole extent of his fortune for any damage done to the goods or lives of other persons by reason of negligence or misconduct on the part of himself or of his officers and crew by collision or otherwise.

All the above liabilities were in accordance with the ordinary principles of the law of England; and these liabilities, so far as circumstances permit, still apply in their full extent to other persons, *e.g.*, to the carrier by land, to the railway company, to the manufacturer, and to the mine owner.

But whilst all other classes remain subject to these liabilities, the shipowner has managed in one way or another to get them all limited, and to procure complete exemption from almost all of them.

In the first place, the shipowner's liability for loss and damage of all kinds, unless it can be proved to have happened by his personal fault or privity, instead of extending to his whole fortune, is limited to an aggregate amount not exceeding £15 for each ton of the ship's burden in case of loss of life, and £8 per ton in case of loss of property.

In the second place, whenever the shipowner is obliged by law to employ a pilot, he is exempted from all liability whatever for damage caused by the pilot's act or neglect, although the case may

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be one in which he would naturally employ a pilot, and although he chooses the pilot himself out of the whole body of pilots. The areas within which and the classes of ships to which compulsory pilotage applies are in the highest degree capricious and arbitrary; the anomalies and injustices caused by the law are great and numerous. Compulsory pilotage is used for the mere purpose of escaping liability; and whilst injured parties are deprived of their proper remedy, the natural operation of liability in compelling care and caution is destroyed.

These limitations of liability are created by positive law. There are still more important limitations of liability which the law allows the shipowner to create for himself. The original liability of a shipowner at common law under an ordinary contract for the carriage of goods was a serious one. He was held to warrant the seaworthiness of the ship at the time of starting on the voyage. He was held bound to insure the safe arrival of the goods in good condition against all accidents, except those which were due to what in the language of our law are called the Act of God, or, in the more appropriate language of foreign law, to *Force Majeure*, *i.e.*, to natural causes directly and exclusively without human intervention, so that they could not have been prevented by any foresight, pains, and care of the carrier or his agents.

But the shipowner, being free to contract as he pleases, has constantly endeavoured to limit his liability by express words, whilst the Courts have struggled to maintain it by limiting the operation of those words. The process has gone on to the advantage of the shipowners, till it has come to pass that bills of lading now contain clauses enumerating every conceivable thing which could cause loss or injury to the goods, and exempting the shipowner from liability arising out of them, "whether the perils or things above-mentioned arise from negligence, default, or error of judgment of the pilots, masters, mariners, engineers, stevedores, servants, or agents of the shipowners, or other persons for whose conduct the shipowners would otherwise become liable;" and some of them even contain a clause exempting the shipowner from liability from loss "by unseaworthiness of the ship after the commencement of the voyage, provided all reasonable means have been



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taken to provide against unseaworthiness." It will need but a farther step to provide expressly against unseaworthiness caused by the actual personal act or neglect of the shipowner; and indeed, as almost everything either in preparing or sailing the ship is now done by the agents or servants of the shipowner, it may now be doubted whether he has not already guarded himself against every possible liability to the shipper of goods arising out of the loss of the ship. If so, in the case of the many ships which adopt this form of lading, his liability is at end, and with it all the motives for bringing the voyage to a safe conclusion which arise out of that liability.

It may be observed in passing, that if freedom of *contract* is invoked, as it no doubt would be were any interference with these contracts attempted, the Legislature has not hesitated to interfere with similar contracts by railway companies.

As if this was not enough, English law has decided, in opposition to the laws of nearly all foreign countries, that if freight is paid to the shipowner beforehand and the vessel is lost, the freight cannot be recovered back; so that the shipowner whose ship is lost can not only protect himself from any liability for not performing his contract, but can, by insisting on payment of freight beforehand, retain the price of the service he undertakes to render although he never renders it.

In the case of passengers, the case, though not quite so bad, is the same in substance. The shipowner by special stipulations in his contract ticket relieves himself from all liability for the negligence of his servants; and these contracts are upheld by the courts.

As regards seamen, no actions seem to have been brought under the clause in the Act of 1876, which creates an obligation on the owner to make and keep the ship seaworthy. But seamen are excluded from the benefit of the Employers Liability Act, which in the case of other employers does away with the doctrine of common employment and gives a short and easy remedy to the workmen.

In regard therefore to almost all those cases in which at common law the special contract or relation with the shipowner creates an obligation to bring the voyage to a safe termination, and subjects him to heavy liabilities if he fails to do so, the shipowner has by

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one means or another managed to get rid of these liabilities, and with them of the motives for care and caution which are, perhaps, their most important attributes.

(*To be continued.*)

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## MR. CHAMBERLAIN'S PROPOSED SHIPPING LEGISLATION.

[The following letter has been received by us just before going to press; but although at some inconvenience, we hasten to publish it, reserving any remarks we may desire to make upon it until our next issue.—Ed. *N.M.*]

*To the Editor of the "Nautical Magazine."*

Sir,—In the paper on Mr. Chamberlain and the shipowners, you invite from the latter a reply to the argument that their right of insurance should be restricted by special legislation.

Will you allow me to enter the lists?

To speak plainly, Mr. Chamberlain desires to limit the amount at which an owner may insure his vessel, as one means to reduce the loss of life at sea; in other words, he says, shipowners, by the protection they can obtain for their material interests are careless about the safety of their ships, and that thereby lives are lost—a euphemistic way of stating that shipowners are induced by pecuniary considerations to connive at murder.

I respectfully, but firmly deny his premises. The oldest, smallest and most dangerous class of vessels are not lost through over-insurance, because no underwriters can be found to take the risk.

The overladen and undermanned but fairly built vessels, are also not over-insured—the very reasons that induce the owner to be parsimonious, prevent his paying more in insurance premiums than he can avoid. Such owners find it a very unremunerative speculation to pay 10 per cent. per annum insurance on the chance of receiving the sum insured.

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Therefore I join issue on the proposition that insurance legislation is required to prevent loss of life at sea.

On the other hand, such legislation would not only be ineffectual against those determined to insure for large values, but it would be seriously prejudicial to many owners, and is furthermore objectionable as being a law branding a class of our mercantile community, to whom more than any other body of men is due England's commercial greatness.

Mutual Insurance clubs, Foreign Insurance companies, and English "Honor" policies would enable an owner to defeat any legislation against what the State might term over-insurance.

Owner and underwriter would distinctly agree upon a valuation as binding upon both, in the event of loss, and no would-be Parliamentary valuation of the property would ever be brought into consideration. You say insurance should simply mean indemnity, and that if a prudent shipowner has set aside in his books a sum for depreciation he should deduct this from the amount he may insure. This would be legislation against prudence and thrift. A screw manufacturer insures his factory, his building and plant depreciate by time and new inventions; but if his place is burnt down, although the law allows only replacement as a matter of fact, he cannot replace an old building, he must of necessity obtain a new structure and new machinery.

He is not asked as to the amount he may have written off as a prudent man for deterioration.

The screw maker not only insures his mill but his stock-in-trade, at a value which includes his own estimation of manufacturing profit.

This he recovers in cash in full in addition to his new factory and new plant, in exchange for the burnt property.

Why, then, should the shipowner not be placed in the same position? He has a trade, and to conduct it requires a ship.

The ship he possesses may be ten years' old, but performs this duty as well as a new one. Why say to him, you shall only receive if she is lost 40 per cent. of the cost of the new ship which you will require to build in replacement, because, for ten years you have, or ought to have, set aside six per cent. per annum depreciation,

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or the market value has fallen. The small capitalist has to live. Is he to be ruled out of existence simply because he is compelled annually to eat all the earnings his vessel makes? Or suppose no profits are made!! Again, how is indemnity to be measured? If the Cunard Company lose their crack ship, the *Servia*, she cannot be replaced in less than eighteen months. During that time the prestige of the line is injured, her earning power is lost, and her parliamentary value would be lying idle. How are they to be indemnified. Is a Court of Inquiry to be held into every loss? Is it proposed that owners shall be called upon to prove their direct as well as indirect losses, whenever so unfortunate as to lose a vessel? Take my own case: I have a fleet of steamers employed under contract abroad, specially fitted and adapted for my trade and certain contracts which I have to fulfil.

The market value of these boats is far below their real value to me. If lost, my service is disarranged, and I should have to charter at considerable loss whilst I built to replace. How am I to show the measure of damages so as to secure the amount I may have insured?

As a fact, my vessels are only half insured, but many cautious men think this imprudent, and many could not afford the risk. A striking illustration of the practical impossibility of determining by legislation what is the proper value for insurance is conveyed in the following statement of facts:—Little more than twelve months ago a Liverpool Mail Company, re-engined and over-hauled one of their steamers, a vessel of some 3,500 tons, at a cost of £30,000. About the same time they bought a new vessel, at a cost of £140,000, to run on the same line. Circumstances have induced the company to sell the re-engined boat for under £30,000. How is the proper insurable value to be ascertained of either of these ships? Is the owner to pay for years to his underwriters a premium on the new ship based on a cost of £140,000, and then, when loss occurs, to be told by his underwriters "You have over-insured. By your own showing you sold a vessel at a price equivalent only to 30 per cent. of the amount you now claim. We will only pay on a value settled by your own standard. True, we have had the extra premium, but this we keep."

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Free-trade in practice is more important than Free-trade in theory, and this is what I claim for the British shipowners. The country has reason to be proud of her Mercantile Navy; it has made her what she is. Surveys, shipping courts, and insurance legislation will assuredly, if pushed too far, be to the British flag what the *Alabama* was to the United States. I admit that it is difficult after a ship is lost to prove unseaworthiness, and as a ship is now presumed to be seaworthy until the contrary is shown, some modification may be introduced and some *primâ facie* evidence required before a loss is recovered to show that as regards draught of water, crew, &c., due regard was had to safety.

The Plimsoll mark as now applied is a farce. When in 1869-70 I suggested to the Board of Trade a load-mark, it was accompanied by a proviso that this mark should be so noted in all the ship's papers so as to be the contract between owner, crew, insurers, and shipowners, as to her draft. Some time afterwards this mark was legalised, but no such proviso was introduced. I have had twenty-five years' experience as a managing owner of many thousand tons of steam shipping, and also as an underwriter, and I unhesitatingly say that far more losses occur from the fault of our Board of Trade certificated officers and engineers and the State-pampered seamen of to-day, than from any other cause or causes.

Insobriety stands, as owners too well know, in the forefront as the causation of disaster, yet nothing is more difficult of legal proof; but when brought home, the culprit's certificate should be cancelled. Reprimands and suspensions do not meet the gravity of the offence.

Yours, &c.,

ARTHUR B. FORWOOD.

Liverpool, February 22nd, 1884.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. IV.

APRIL, 1884.

## MERCHANT SHIPPING LEGISLATION.

IN our March number is an important letter from Mr. A. B. Forwood on the subject of Mr. Chamberlain's proposed legislation for reducing the number of seamen's lives lost at sea. It is an important letter, as it discloses the views of a class of the best of our shipowners. Ships belonging to owners like Mr. Forwood are never to be found amongst those known technically amongst underwriters as "rough" risks.

The first objection Mr. Forwood advances to Mr. Chamberlain's Bill is that Mr. Chamberlain proposes "to limit the amount at which an owner may insure his vessel."

Mr. Forwood's statement is right; for Mr. Chamberlain does propose to limit the insurance that can be effected on the ship; but, on the other hand, Mr. Forwood omits to note that the limit proposed by Mr. Chamberlain is practically no limit, for the limit proposed is only one which would place the shipowner in the same position he would have been in "if the voyage had been successfully carried through." In the sense of legitimate trade this can scarcely be called a "limit;" for it only limits the amount of insurance to the value of the thing insured. As therefore under the Bill a



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shipowner will receive to the utmost just as much from insurers when his ship and all hands go to the bottom as he can make if the ship successfully makes her voyage, the very objection to the Bill must in itself show that the Bill is not understood; or must give rise to the belief that there are still persons who object to it solely on the ground that it will not permit in future the making of more money out of the disappearance of a ship than by prosecuting a voyage in safety. On the other hand, it also logically follows that those shipowners who allege that the present law of insurance is right, and to whom it allows no more than the proposed law would allow, that is "indemnity," cannot be injured by the proposals in the new Bill.

Mr. Forwood, however, says in plain words, that what Mr. Chamberlain has alleged and proposes is simply saying "that shipowners are induced by pecuniary considerations to connive at murder." Now if Mr. Forwood would carefully read Mr. Chamberlain's speeches he would see that Mr. Chamberlain has not only not said this, but he has, in precise words, denied that he ever said it, or ever imputed it, or ever meant it, or ever thought it. All that Mr. Chamberlain has said, and his speeches are very carefully reported, is that the state of the law which allows any shipowner to make a *greater* profit on the total disappearance of a ship and her crew, than he could possibly make by a successful prosecution of any given voyage, is in itself bad. It is bad because it does not "make" for safety. Mr. Chamberlain has never said it is not good for investors, all he has contended is that it is bad for sailors. That is the whole case.

Mr. Forwood compares the working of fire insurances on land with that of marine insurance. He instances the case of a screw-maker and his mill and his stock-in-trade, and he asks triumphantly "why should not a shipowner be placed in the same position as the millowner?" We think Mr. Forwood has missed the mark altogether. The very object of the Bill, it seems to us, is to place the shipowner and the screw-maker in exactly the same position, that is to say, to give both "indemnity" for the loss sustained; and in marine cases (when necessary) to give the insurer of ships the right now possessed by the insurer of

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shops, that is to say, full power to open the question of value with the assured, in order to settle the amount of loss for which indemnity is to be paid. Let Mr. Forwood insist that the same principles shall apply to ship insurance as to shop insurance, and he will be right, and he will support the principle of the Bill.

Mr. Forwood's contention is that when an old or old-fashioned ship is lost, the shipowner ought to be able, by means of insurance, to replace her by a bran new modern ship. He seems to think that a ship which cost originally £140,000, but could only be sold in the market, and was so sold as a ship, for £30,000, should, if sold to the underwriters as a wreck, be capable of realising the sum of £140,000. If the insurance law at present allows, and it does allow such a transaction as he seems to advocate that law certainly cannot (as Mr. Arnold would say) "make for safety." Again we remind Mr. Forwood that that is all Mr. Chamberlain has said. But to go back to the "shop," Mr. Forwood surely does not mean to assert that under the Fire Insurance law an owner of a shop or mill can, by means of over-valuation, followed by a fire, replace an antiquated ramshackle shop or shed by a bran new modern workshop regardless of the "value" of the one burnt down; or can replace antiquated tools and machinery, by the newest inventions, regardless of the value of the old shop and old machinery destroyed, and that on the top of that the shopowner can insure prospective profits in the gross, as well as the expenses and wages that he has *not* paid, but which he would have had to have paid out of pocket before he could have earned those gross profits. If Mr. Forwood does think so we shall be very glad if he can give some cases in point.

Every one admits that in the shipping trade, as in all others, there be "black sheep." This being an admitted fact, what puzzles us is, that shipowners of the first reputation in the land, who do not insure at all, or who greatly under insure, who never underman and never overload or over value their ships, and never evade their responsibilities in any way, should be found leading oppositions to reforms which can never touch the well-doer, and which in the end must be for the benefit of trade all round, and for the safety of life and property.



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We believe implicitly in Mr. Chamberlain's intentions, and in the objects he seeks to obtain, and in the way he seeks to obtain them. That his Bill is open to improvement and alteration in matters of detail the right hon. gentleman himself admits and very freely asserts. To send his Bill to a Select Committee would be to shelve the whole question for some years. We trust that before these pages meet the eye of our readers an arrangement will have been arrived at between the trade and the Government for facilitating the passing of the measure this Session; for we believe that if such an arrangement is not brought about, the country will be on the eve of another agitation, compared with which the last one led by Mr. Plimsoll will have been as nothing. We believe that Mr. Chamberlain's bill does hit the blots in our legislation; and we believe, further, that if any evidence were needed that it does so, that evidence is to be found in the line of argument used against him, against his advisers and against the Bill. In expressing our convictions on this point, we know that we shall not find sympathy with some of our readers. We regret that we should even appear to sound a jarring note in our pages; but, on the whole, we think it wise, from full conviction of the gravity of the case, and in the interests of our great Mercantile Marine, and especially in the interests of masters and officers who dare not, if they would, speak for themselves, to write plainly now, rather than to join in the chorus of those persons who counsel the shipowners to shelve legislation under the flimsy guise of "instituting further inquiry."

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## COMPULSORY PILOTAGE.

THE total abolition of Compulsory Pilotage, except in the Avon and the Clyde, proposed by the Merchant Shipping Bill, has not unnaturally drawn a good deal of attention to the subject, and considering the complex nature of the subject it may be a convenient time to present to the readers of the *Nautical* a brief outline of the law on the subject as it stands.

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That the present condition of the law is unsatisfactory, except to practitioners in the Admiralty Court, there can be no doubt, as in a great number of cases it is a question of the utmost uncertainty whether a vessel is or is not bound to employ a pilot, and whether, if one is employed, the owner is or is not responsible for damages caused by the negligent navigation of the ship.

It may be well in the first instance to glance very briefly at the history of compulsory pilotage,* and to do this we must imagine what the danger and difficulty must have been of navigating an old-fashioned sailing ship, which would not lie nearer the wind under any circumstances than 7 points, and which would, under single reefed topsails or their equivalent in the sails of those days, make one or two points leeway, say from off Beachy Head past the Royal Sovereign shoals and past the Varne and Ridge, and then either through the Downs or outside the Goodwins, thence in and past the numerous dangerous shoals at the entrance of the Thames. Not as at present, with every danger carefully buoyed and almost every course carefully marked by leading lights; but with little or no assistance save an occasional glimpse of the land and the constant use of the lead.

Under such circumstances, it is obvious that self-interest would lead the shipmaster and shipowner to obtain the assistance of an expert if possible, and that to avoid the probability of an inexperienced person volunteering to perform a duty for which he was not competent, it would be most desirable that some public body should have the power and responsibility of examining all persons who offered themselves as to their fitness, and should give an authoritative license to those who proved themselves properly

* In early days it is probable that every ship of any size carried a special navigating officer, like the "master" in the Navy up to recent times, the "sailing master" of a yacht, where the owner nominally commands at present, and the coasting pilot frequently employed by large vessels whilst in the Channel and North Sea; that person would be called a pilot, though his knowledge of navigation was general not special. The term is still preserved in the South of Europe as the appropriate title of the officer charged with keeping the ship's reckoning, and is even recognised as the legal title in some of the Codes of Maritime Law, *e.g.*, that of Portugal. Arts. 1419-1422.

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qualified, to the exclusion of all others. And it was not unnatural that in return for these services, it should be insisted upon that these duly licensed pilots alone should be employed by all ships, otherwise if, when the weather was fine and the wind fair, the ship master did not take a pilot, and only called for one when in difficulties, the pilot's life would have been by no means an happy one. Hence a species of mutual bargain arose between the licensing bodies of different ports or parts of the coast—the Trinity House of Deptford Strond for the River Thames and its approaches, as well as for the waters adjacent to numerous other ports; the Trinity House of Hull for the Humber and its approaches, and the Trinity House of Newcastle for the Tyne and its approaches, besides other local authorities for other ports—on the one hand, and the shipowners on the other, that the former would guarantee a constant supply of qualified pilots, and that the latter should in all cases employ them; and these agreements have been sanctioned and enforced, with certain exceptions and reservations, by various Acts of Parliament and Charters, and more recently by Orders in Council, down to the present time.

It is not improbable that if the licensed pilots were to retain their monopoly whilst losing their compulsory employment, the profession would still offer inducements to a high class of men to enter and remain in it; and although doubtless fewer ships than at present would employ pilots, yet a very large number of foreign-going ships would still in their own interest employ persons with special local knowledge; and not improbably a clause in policies of insurance would make the non-employment of a licensed pilot, when one was obtainable, an infringement of the conditions of the contract.* In any case, if compulsory pilotage is to be abolished in the interests of the public, it appears only equitable and in accordance with universal precedent in the case of depriving a man of his income, that compensation should be given for any loss which the individuals can fairly show they will sustain.† From con-

* See Arnold on Marine Insurance, 4th Ed., Part II., Chap. iv., pp. 596-599.

† This compensation, moreover, would not be confined to the pilots themselves in several cases, notably and recently in that of Liverpool, where a

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sideration of the reasons already given, it is probable that the amount to be awarded would not turn out to be very large, which certainly is to be hoped for, not merely from the point of view of the Treasury, but from the larger one of the desirability of preserving the present high class of pilots.

To turn now to the other side of the question, that is, the admittedly unsatisfactory state of the present law.

No doubt the Legislature intended, when the Merchant Shipping Act of 1854 was passed, to settle the question in an intelligible and simple way, providing only for interests then vested; but in its jealous care for the latter it enacted (Merchant Shipping Act, 1854, s. 353), that "the employment of pilots shall continue to be compulsory in all districts in which the same was by law compulsory immediately before the time when this Act comes into operation;" (by s. 3, 1st May, 1855) "and all exceptions from compulsory pilotage then existing within such districts shall also continue in force." The effect of which was to let into the question of compulsory pilotage not only the General Pilotage Act (6 Geo. IV., c. 125), but all the Acts prior to that* local and public, and an array of ancient charters to various corporations, some of which have never been printed, and are practically inaccessible to the public. It is true that the Merchant Shipping Repeal Act, 1854, passed as a necessary supplement to Merchant Shipping Act, 1854, schedules the whole of the General Pilotage Act (6 Geo. IV., c. 125) for repeal, but as the two Merchant Shipping Acts came into operation simultaneously, the provisions of the General Pilotage Act were in operation "immediately before the time when" those Acts came "into operation," and moreover,

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quasi-public body acting in the interests of the community it represents, has acquired for a considerable sum of money belonging to that community some or all of the rights formerly held by the pilots.

* 3 Geo. I., c. 13; 7 Geo. I., stat. I., c. 21; 5 Geo. II., c. 20; 43 Geo. III., c. 52; 48 Geo. III., c. 104; 52 Geo. III., c. 39; are amongst those which have to be considered on the single question whether a passenger steamer inward bound from Australia, and belonging to London, is bound to employ a pilot above Gravesend, to say nothing of a charter of James II., to the Trinity House. See the *Hankow*, 40 L.T. Rep., N.S. 335.

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the repealing statute contains the following embarassing provision :—

Sec. 4. "There shall be hereby repealed."

"The several Acts and parts of Acts set forth in the first schedule hereto to the extent to which such Acts or parts of Acts are therein expressed to be repealed, and all such provisions of any other Acts or of any charters, and all such laws existing and rules as are inconsistent with the provisions of the Merchant Shipping Act, 1854."

"Provided that such repeal shall not affect"

* * * * *

(7.) "Any appointment, bye-law, regulation or license duly made or granted under any enactment hereby repealed, and subsisting at the time when that Act comes into operation, and the same shall continue in force but shall be subject to such provisions of the Merchant Shipping Act, 1854, as are applicable thereto respectively."

Sec. 6. "The 4th and 9th sections of The Pilotage Law Amendment Act, 1853 (16 & 17 Vict., c. 129) shall be construed as if the 5th Part of The Merchant Shipping Act, 1854, were therein referred to in lieu of the Act 6 Geo. IV., c. 125."

On referring to 16 & 17 Vict., c. 129, s. 4, we find that it provides that certain Cinque Ports pilots shall be subject to all the provisions of the 6 Geo. IV., c. 125, and *of any other Act then in force*, except section 4 of 6 Geo. IV., c. 125, making altogether a tangle, which, from 1854 to 1884, has given constant employment to some of the acutest members of the bar of England, and most celebrated of her Judges to unravel.

Since 1854 there has been only one Public Statutory Enactment as to pilots, "The Merchant Shipping Act Amendment Act, 1862" (25 & 26 Vict. c, 63, s. 41), but a variety of Local Acts have been obtained on the subject, to say nothing of Orders in Council and other regulations, a complete list of the headings only of which, up to 1882, occupies fourteen closely printed pages in Maude and Pollock's "Law of Merchant Shipping," 4th Edition, Appendix (pp. 110-124). For our purpose it will suffice to point out a few of the anomalous results which have been produced.

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A vessel carrying passengers is bound to have a pilot in the London district (Merchant Shipping Act, 1854, s. 376)—London to Dungeness and Orfordness (sec. 370)—and in the Trinity House Outport Districts (sec. 376), excepting on certain voyages hereafter referred to; but a vessel, irrespective of having passengers on board, was not bound to employ a pilot in her own port (6 Geo. IV., c, 125, s. 59), unless in virtue of some special provision (*Ibid*); therefore, a passenger vessel coming from foreign ports, but belonging to London, is bound to take on board a pilot at Dungeness and employ him, but she is not bound to take on board or employ a pilot at London outward bound till she reaches the limits of the port. But it was held that the pilot who is taken on board at Dungeness by Compulsion of Law, is in charge compulsorily even after the vessel has entered the limits of the Port of London (The General Steam Navigation Company *v.* The British and Colonial Steam Navigation Company, L.R. 3 Ex. 330; L.R. 4 Ex. 238), on the supposition that there was no special regulation in the Port of London. After some years it was discovered, however, that the Charter of the Trinity House of Deptford Strond granted by James II. did contain "particular provisions" for the Port of London, and therefore, that a ship was bound to employ a pilot (*The Hankow*, 40 L.T. Rep., N.S. 335) even in her own port if she had passengers on board, though if she had no passengers she is exempted in such a place, under the special provisions of sec. 379, sub-sec. 5, of Merchant Shipping Act, 1854. It is, however, fair to add that a note to the case cited above throws some doubt on that decision on the ground of the Cinque Ports Pilots who could have piloted the ship up to London, not having their rights by charter, but "time out of mind."

Another difficulty arises for the want of a definition of a passenger. The decisions on this point are mostly negative, *i.e.*, that a person working his passage, but not receiving pay or paying for his passage, is not one (*The Hanna*, L.R. 1 Ad. and Ecc. 283). Nor are relations of the master taking a passage without the owner's leave, and, subsequently to a collision, collusively paying passage money—(*The Lion*, L.R. 2, Ad. and Ecc. 102; L.R. 2 P.C. 525)—nor the wife of the mate

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taking a passage with permission of the owner's agents, and paying no passage money (*The Ella*, Mit. Mar. Reg., March 7th, 1884, p. 150). From the analogy of the latter case it would appear that guests of the owner, as *e.g.*, Mr. Gladstone and his party when on board the ships of the Castle line, as guests of Sir Donald Currie or the Castle Company; or persons on board on a trial trip; or the friends of a yacht owner, are not "passengers" for pilotage purposes.

But perhaps the greatest confusion of all exists in connection with the different voyages in which a ship may or may not dispense with the services of a pilot. By the statute 6 George IV., c. 125, s. 59, all British vessels, irrespective of passengers, trading inwards and outwards from London to ports between the Baltic (to the South), and anywhere to the North Cape and round it into the White Sea (to the North), and also constant traders inwards from ports between Boulogne and the Baltic, were exempt from compulsory pilotage so long as they used the North Channel into the Thames. Whilst an Order in Council, of 18th February, 1854, and therefore also in force at the time the Merchant Shipping Act came into operation, extends the exemption to all vessels,—which, however, has recently been held to mean all British vessels (*The Vesta*, 7 P.D. 240)—which on voyages from ports between the Baltic and round the North Cape to the White Sea use the South Channel, and also to all vessels, when *outward* bound to ports between Boulogne and the Baltic, by either passage, and when inward bound by the South Channel. Hence, in 1854, British vessels, and British vessels only, were exempt when bound to or from any place North of Boulogne by either channel. By the Merchant Shipping Act, 1854, sec. 353, these exemptions are preserved, and by sec. 379, exemptions are granted to all vessels, irrespective of nationality, when not carrying passengers, and trading to Boulogne and any place north of it in Europe. Hence under the combined operation of the various exempting enactments above referred to, a British vessel on her inward or outward voyage between London and places north of Boulogne is exempt, as before the Merchant Shipping Act, whether she has passengers or not (*The Earl of Auckland*, Lush 164, 387).

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Whereas a foreign ship can only claim exemption under the Merchant Shipping Act on a similar voyage and so is bound to employ a pilot if she has passengers on board (*The Hanna*, L.R. 1 Ad. and Ecc. 283; *The Vesta*, 7 P.D. 240).

Another exemption under the 6 Geo. IV., c. 125, is that of Irish traders in the Thames and Medway, without reference to passengers; but here another consideration comes into operation because the Merchant Shipping Act, 1854, s. 354, positively enacts that every ship carrying passengers between the ports in the United Kingdom or Channel Islands or Isle of Man shall be compelled to take a pilot in places for which pilots are licensed, and so overrides the previous exemption. Hence any Irish trader or coasting steamers with passengers are now obliged to employ a pilot in the Thames (*The Temora*, Lush, 17), producing this curious state of things, that a British passenger steamer bound from, say Antwerp to London, is not bound to employ a pilot, whereas one bound from Hull is. An attempt was made to deal with the anomaly by an Order in Council of 16th July, 1857, but this Order was held inoperative on the ground that it was based in a mistake of law (*The Earl of Auckland*, Lush, at p. 179). Since the decision of that case however some Orders in Council have been made which affect the question. By Order in Council of 25th July, 1861, vessels navigating in ballast from one port in the United Kingdom to another port so situated, are exempted, and by Order in Council of 21st December, 1871, compulsory pilotage for non-passenger vessels was abolished in cases where the voyage is from or to places north and east of Brest. Hence now a foreign vessel, when not carrying passengers, and only then, is exempt on voyages of which one terminus is foreign, or the Channel Islands and north and east of Brest; and a British vessel, whether carrying passengers or not, is exempt when the terminus is north of Boulogne, and only if not carrying passengers when the terminus is between Boulogne and Brest.

In dealings with these peculiarities, not to say absurdities of the law as it stands, the instances have been confined to the Thames, but it would not be difficult to find inconveniences almost as glaring in the case of the compulsory pilotage districts of the Avon, the

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Mersey and Humber, to say nothing of other peculiar exemptions, common to all the Trinity House outports,* and in the interests of all, whether shipowners or shipmasters, shippers or passengers, pilots or watermen, it must be most desirable to settle the matter in a manner fair to all parties, and at the same time intelligible to ordinary mortals, without special legal training.

The real objection, however, is not to the single fact of this or that ship being obliged to employ a pilot, but to the results which sometimes follow his compulsory employment.

It certainly appears that if a shipowner is bound to allow a particular individual in the selection of whom he has no voice, and of whose capacity he cannot judge, to take charge of his ship, that it would be extremely unjust to leave the owner to meet the consequences of that person's incompetence, and this applies forcibly in the case of the ordinary merchant ship, who has been obliged to take the first pilot who offered his services, but it hardly applies to the very numerous cases in which a specially selected pilot is always employed going down to Plymouth or Cork, to meet the inward bound ship, or sometimes making the voyage to Lisbon and Madeira in one vessel of a line to come back in the next; his case appears not dissimilar from that of the certificated officers, as in each case the owner has a choice, but of only a limited class. The same observation applies to all outward bound ships, as they can obtain any disengaged pilot they like.

It must be borne in mind however that for a shipowner whose ship has done damage to another vessel, to shelter himself behind a pilot compulsorily employed, it is necessary that the fault of the pilot should have been the *sole* cause of the damage, and therefore

* Vessels passing through a pilotage district, but not "loading" or discharging cargo within it, are exempt. In a case at the present moment *sub judice* in the Court of Appeal, a vessel coming into Dartmouth short of coals and taking on board a few tons, has been held in the Court of Admiralty (*The Winston*, 8 P.D. 204), liable to compulsory pilotage in Dartmouth in consequence of such loading. For further information on these points, it must suffice to refer to "The Law of Pilotage in the River Thames," by T. J. E. Farnfield, Maude and Pollock on Merchant Shipping, and a perfect host of Blue Books and Parliamentary returns published every year, and sometimes more than one in a year since 1850.

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unless everybody and everything belonging to the ship is perfectly efficient, the excuse of "compulsory pilotage" is of no avail. Nevertheless it is found a good defence in a sufficient number of cases to make it a great hardship to the innocent sufferer to whom the injured ship belongs, and who finds himself relegated for his remedy from a solvent shipowner and substantial ship to an impecunious pilot and his barren bond.

This evil has been felt in other places besides England, but in only two countries—Belgium and Portugal—has been, so far as we are aware, dealt with. In the former—Belgium—by the summary method of making the owner liable for the faults of a pilot in charge of his ship by compulsion of law (*The Halley*, L.R. 2 Ad. and Ecc. 3; L.R. 2 P.C. 193); in the latter—Portugal—by throwing the responsibility from the acts of the pilot on the Pilotage Board who apppoint him (Commercial Code of Portugal, Act 1583). The objection to each of these methods is obvious, the first, on the grounds of natural equity; the second, because in England at all events, the funds applicable for compensation in such cases would have to be obtained from the shipping community generally, and thus all the innocent shipowners would have to suffer for the fault of a negligent or incompetent pilot. It has been suggested that the difficulty might be partially at all events met by largely increasing the amount of a pilot's bond. If this were done the pilot could, no doubt, by paying a certain percentage to a guarantee association, be entitled to give such a bond, but would, on ordinary principles of supply and demand, require to be reimbursed for such extra expenditure by increased rates. But this would only be patching up an old garment. It would, we are convinced, be for the ultimate benefit of the shipping community, if the compulsion to employ pilots were abolished—and if the responsibility of providing for the safe navigation of vessels through the channels adjacent to our coasts, and leading to our ports and harbours, were placed entirely upon the owners of such vessels. We do not of course mean that pilots should be abolished, but only that the law of supply and demand should be allowed to regulate their numbers and their charges; the condition remaining in force that no one

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should be permitted to act as pilot to any vessel unless he can produce a certificate of competency granted to him by properly constituted authority. We are not sanguine enough to expect that our views will be at once carried into effect, but we take the opportunity of reiterating opinions which have been before expressed in this journal, feeling sure that the time will come when they will be acted upon.

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## MERCATOR'S CHART.

### ITS HISTORY, USE AND ABUSE.

(*Continued from page* 291, *April No.*, 1883.)

IT has been shown that on Mercator's chart the shortest distance between two places appears as a straight line, but that the rhumb oblique to the meridians, and cutting them at equal angles is really a curve continually approaching the pole. It may, however, be shown experimentally on a terrestrial globe, by stretching a piece of thread evenly between the same two places, that the shortest distance is not a straight line, but part of a circle, and in order to arrive at either place from the other by such a route, the direction (or course) must be constantly varying—unless indeed both places are on the equator, or on the same meridian, in which case the track by the great circle and the rhumb coincide. The fundamental theorem of what the old navigators usually called "globular" sailing is therefore this—the *arc of a great circle* joining two points on the surface of a sphere is *the shortest distance* between them; and on no other than on a great circle course does the ship steer for her port as if it were in sight.

All the computations in great circle sailing are effected through the methods of spherical trigonometry. Into these it is not intended to enter, but it may be well to indicate a few of the principal terms connected therewith. The equator, which is a great circle, bisects every other great circle on the earth's surface, and there must

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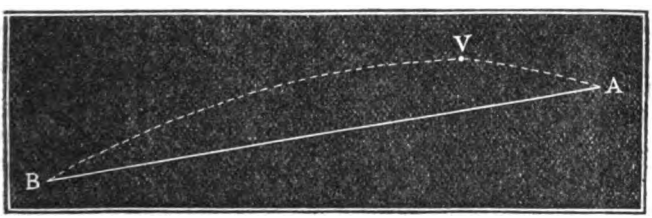
necessarily be two points in every such circle equidistant from the equator and at the same time furthest removed from it; each of these points is called *vertex*; and the *latitude of vertex*, which is the highest latitude attained in sailing on a great circle, is the nearest approach to the elevated pole. The meridian cutting the great circle at the vertex is the *meridian of vertex*; and the *longitude of or from vertex* is the arc of the equator intercepted between the meridian of any place and the meridian of vertex. The *angle of position*, which is the first great circle course from a place, is the angle at the place between the plane of its meridian and the plane of the great circle; and the *distance* is the length of the arc of the great circle expressed in nautical miles.

The following diagram may be taken as showing the difference between the great circle and the rhumb line as delineated on Mercator's projection. Here, as is always the case, the rhumb (or loxodromic spiral) between A and B is a straight line, and the arc




of the circle is a curve (dotted line with V as *vertex*), indicating an *apparently* greater distance between the two places. A ship sailing on a great circle between two places on the same side of the equator is always in a *higher* latitude than if she had sailed on the rhumb line, and both tracks coincide at their extremities.

In the clear language of RAPER, "the course on the rhumb line, from one of two places to the other, is exactly the opposite of the course to that place from the other; while on the great circle these courses are very different. The ship, while on the rhumb line, is always changing the direction of her head with respect to her port, for which she never steers exactly until it is in sight, because this track cuts all the meridians at the same angle, and the meridians themselves are not parallel to each other. But on a

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great circle she steers directly for her port, while, as the angle made by her track with the meridians is perpetually varying, the direction of her head appears by the compass to be continually changing. The great circle track, accordingly, is the only one on which the ship nears her port by the whole amount of distance which she makes good from instant to instant."

The great circle and the rhumb line differ most widely from each other in high latitudes and between places on nearly the same parallels. When the two places are on opposite sides of the equator, the great circle and the rhumb line intersect each other, and the difference between them is not so perceptible.

Steamers being to a certain extent independent of winds and currents can take a great circle route which is impossible to sailing ships, but the latter may often shorten the distance when adverse winds are encountered, by taking a course anywhere between the great circle and the rhumb line. When the places are widely separated, as in high southern latitudes, a great circle course is impossible to steamer and sailing ship alike, but advantage may be taken of a *composite route*, formed by sailing partly on a great circle and partly on a parallel.

Towson's "Tables to Facilitate the Practice of Great Circle Sailing" obviate the necessity of computation; and are equally useful, with or without the index chart. Godfray's chart on the gnomonic projection shows the great circle course as a straight line, and the points for transfer to Mercator's chart can readily be taken off it. Where neither is at hand the navigator can speedily determine the practicability of the great circle route by Sir G. B. Airy's *method for sweeping an arc of a circle*, on Mercator's chart, which approaches very nearly to the correct projection of a Great Circle on one side of the Equator: the sweep of the arc is accomplished by attending to the following precepts adapted to the table which accompanies them.

*Rule*—1. Join the two places by a straight line. Find its middle. Draw thence a perpendicular to that line on the side next the Equator, and, if necessary, continue it beyond the Equator.

2. With the middle latitude (between the two places) enter the following table, and take out the corresponding parallel.

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3. The centre of the required sweep will be the intersection of this parallel with the perpendicular.

| Middle Lat. | Corresponding Parallel. | | |
|---|---|---|---|
| 20° | Opposite Name. | 81° | 13′ |
| 22 | | 78 | 16 |
| 24 | | 74 | 59 |
| 26 | | 71 | 26 |
| 28 | | 67 | 38 |
| 30 | | 63 | 37 |
| 32 | | 59 | 25 |
| 34 | | 55 | 5 |
| 36 | | 50 | 36 |
| 38 | | 46 | 0 |
| 40 | | 41 | 18 |
| 42 | | 36 | 31 |
| 44 | | 31 | 38 |
| 46 | | 26 | 42 |
| 48 | | 21 | 42 |
| 50 | | 16 | 39 |
| 52 | | 11 | 33 |
| 54 | | 6 | 24 |
| 56 | | 1 | 13 |

| Middle Lat. | Corresponding Parallel. | | |
|---|---|---|---|
| 58 | Same Name. | 4° | 0 |
| 60 | | 9 | 15 |
| 62 | | 14 | 32 |
| 64 | | 19 | 50 |
| 66 | | 25 | 9 |
| 68 | | 30 | 30 |
| 70 | | 35 | 52 |
| 72 | | 41 | 14 |
| 74 | | 46 | 37 |
| 76 | | 52 | 1 |
| 78 | | 57 | 25 |
| 80 | | 62 | 51 |

Facility in delineating the great circle on the chart has this advantage; when, from adverse winds or other causes, a vessel has to deviate from the track, the great circle may, at any moment, be struck off anew, such that it shall pass through the *actual* position and the port to which the vessel is bound.

When, thirty years ago, the clipper ships were making their rapid voyages to Australia and New Zealand on the composite route, great circle sailing was spoken of as a novelty; it was, in fact, only a resuscitation of a neglected branch of navigation—neglected owing to the apparent convenience of Mercator's chart. Navigators before, and for some time subsequent to, Mercator's day preferred great circle to rhumb, sailing. Probably few of our readers have heard of "The Seaman's Secrets," by John Davis, a second edition of which was published early in the 17th century (1607). The following extract shows at once the estimation in which great circle sailing was held by the old navigators, and the quaint diction in which they expressed themselves.

*What is the great Circle nauigation?*

Great Circle nauigation is the chiefest of all the 3 kindes of sayling, in whom all the other are contained, and by them this kinde of sayling is performed, continuing a Corse by the shortest



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distance betweene places, not limited to any one Corse, either horizontall or paradoxall, but by it those Corses are ordered to the full perfection of this rare practise, whose benefites in long voiages are to great purpose, ordering & disposing all horizontall trauerses to a perfect conclusion; for there are many changes of horizontall and paradoxall Corses in the execution of this practise, so that vpon the shifting of a wind, when that it may seeme that you are forced to an inconuenient Corse by the skill of great Circle sayling, that Corse shall be found the shortest and onely proper motion to perfourme your voiage. And also when with fauourable windes the Pylote shall shape a Corse by his Chart or Compass paradoxall, as the best meane to attaine his porte, he shal by this kinde of sayling finde a better and shorter Corse, and by sufficient demonstration prooue the same, so that without this knowledge I see not how Corses may be ordered to their best aduantage; therefore sith by it perfection of sayling is largely vnderstood, & the error likewise most substantially controled, it may of right chalenge the chiefest place among the practises Gubernautick. The particularities whereof, if I should by an orderly methode labour to expresse, it would be a discourse ouer large for this place, and as I thinke troublesome if the premises be not well vnderstood.

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The conception of a variation chart is not of recent date; the cosmographer Alonzo de Santa Cruz, from very imperfect observations, constructed such a chart in 1530. More than a hundred years later the astronomer, Edmund Halley, undertook, at the expense of the government of the day, three voyages into the Atlantic for the verification of certain physical data, the result of which was the production of a general *variation chart* on which the points where the navigator had found the same amount of variation were connected by curved lines. Towards the end of the last and the beginning of the present century, William Mountaine, F.R.S., constructed, from more than 50,000 actual observations made in different parts of the world, a variation chart which was sold by Messrs. Mount and Page at their nautical warehouse on Tower Hill. During the present century charts giving various

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magnetic elements have been numerous enough—for instance, those of Sabine, Barlow, Erman, and Horner, as well as others computed according to Gauss' theory of terrestrial magnetism—the latest being that issued by the Hydrographic Office of the Admiralty in 1858, and designed by Staff-Commander (now Captain Sir) F. J. O. Evans, the present Hydrographer.

A compass is drawn on a chart for the purpose of setting off courses and bearings; when it is projected according to the variation due to any given locality it is said to be magnetic. There is no such thing as a true compass excepting on the meridian of no variation where the magnetic needle points true north and south; nevertheless the rhumbs or compass points can be projected true on a chart of any part of the world, and in this sense it is permissible to speak of a true compass when the north and south points are drawn to coincide with the geographical or astronomical meridian. In these remarks, and on this basis, the compass will be spoken of as either true or magnetic as the case may be; and the term variation, as more familiar to the seaman, used in preference to declination of the magnetic needle.

In closing the subject of this paper it may be appropriately asked whether it was judicious to alter the true compass, as formerly delineated on charts, into the magnetic compass as it is at present? —an alteration made within the last thirty years, and almost coincident with the general substitution of iron for wood in ship-building; and the effect of which substitution was to bring ships' compasses within the influence of powerful disturbing forces hitherto unsuspected, or but little known before the introduction of iron ships.

When the Admiralty, through the Hydrographic Office, seriously entered into the business of producing and publishing charts, which they did on the appointment of Captain (but better known as Admiral) Beaufort as their Hydrographer, they strictly confined themselves to the results of the surveys conducted by their own officers, in ships of the Royal Navy. In those early days, when general charts formed no part of the work of the Hydrographic Office, the compass was drawn true, as was the case on the general charts of the private publishers; and little or no change was made



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until the Admiralty produced the chart of the world with "the curves of equal magnetic variation," presumably computed on the basis of Gauss' theory of terrestrial magnetism, together with the observations then existent. In those days also the only competitors of our Admiralty in the field of maritime surveys were the Dutch, French and Spaniards. All these published charts with the compass true.

Suddenly, and as if by magic, when the Admiralty became compilers of general charts, as well as producers of original surveys, the compass was transformed, as if by the common consent of all chart publishers, from true to magnetic; and to this change may be attributed some portion of the bad and careless navigation now existing. Trusting to the chart the seaman considered himself relieved of some of the duties of observation, and this, in the perilous times when a new danger was arising through the deviation of the compass in iron ships and steamers. It must not however be forgotten that, by a strange anomaly, while the compass on charts was still true, the nautical notices and sailing directions were given "bearings magnetic."

It is as well to critically examine, through a comparison with sailing directions, some of the results of the adoption of the magnetic compass on charts.

Tevennec light, as originally announced in the French Notice of 1875, was stated to be white between N. 15° W. and N. 32° W.; red between N. 32° W. and N. 72° W.; again, white from N. 72° W. through South to East; and obscured between East and N. 15° W. These being true bearings they will remain unaltered so long as no alteration is required in any one of the sectors. The English Notice in 1875 stated that the same light would be white between N. ½ E. and N. by W.; red from N. by W. to N.W. ¾ W.; white from N.W. ¾ W. through West and South to E. by S. ¼ S.; and obscured from E. by S. ¼ S. to N. ½ E. If we try to eliminate the exact *variation* used in the English Notice we arrive at no nearer conclusion than that it must have been something between 19½° and 20¾° W., and this arises from a species of give and take system in adapting the bearings to the nearest quarter point of the compass.

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Close by the Tevennec light is that on the Falaise du Raz, furnished with two sectors; and if a similar comparison be instituted beween the French and English Notices of these sectors, the *variation* comes out 20½°, 21°, and 21½° W. At the locality indicated, the variation for the year 1888 is about 19½° W., and has decreased since 1875 to the extent of about a degree; but the anomalies here pointed out are still continued in the sailing directions and light books.

We willingly admit that similar discrepancies are not generally found in the cases where the bearings are given in degrees; but they will invariably exist when there is a straining to accommodate them to the points and quarter-points of the compass.

Similarly, if we turn to the directions for the coasts of the British Islands, we shall find anomalies of a similar character. In the midst of bearings which, within the last twelve years, have been properly altered to the extent of a quarter of a point, there are others indicating no change in the variation. At one spot on the coast of Ireland we find a change of bearings indicative of half a point of alteration in the variation, and close by these are to be found a change to the same extent in one bearing and none in another, as if the range of a sector had been enlarged; which it has not been. Finally, if we refer to sailing directions for the Bristol Channel published in 1839, we see that the Nash lights are stated to be E. ¼ S. from Lundy light, and E.N.E. ¼ E. from the Foreland; and in 1872, as well as in 1879, the first bearing is given as E. ¼ S., and the second as N.E. by E. ¾ E., due of course to a change in the variation, in the interval, of nearly half a point; but all the while the bearing of the two Nash lights, which are 1,000 feet apart, and in stationary lighthouses, is stated to have been S.E. by E. ½ E.

And yet further;—our seamen, and especially coasters, have a great liking for the "magnetic bearings and distances between the principal headlands and lights" on our coast. Take the English Channel, and what do they learn. According to the "directions" selected, they will find the Lizard Light to bear from the Wolf Light E. by S. ½ S., E. by S. ¾ S., and E.S.E.; Dungeness Light to Cape Grisnez Light S.E. by E. ½ E., S.E by E. ¾ E., and E.S.E.; Beachy

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Head to Cape Grisnez E. by S. and E. ¾ S.; and from the Eddystone to the Casquets the difference in the several bearings runs through half a point of the compass.

Thus far reference has been to British productions; but the same discrepancies and incongruities pervade foreign works, where the magnetic compass and bearings are adopted. Furthermore the compass on the chart is often forgotten, and hence remains unaltered, for years; several such charts, recently issued, now lie before us with the magnetic compass in error to the extent of from 3° to 5°, not having been changed since 1854-55.

As a matter of fact on instituting a comparison between charts, sailing directions, and remarks in light books, we find, for a given locality, a general want of agreement, arising chiefly out of the bearings and courses being *magnetic*, and for different dates; and this would not be the case were those important elements of navigation *true*.

(*To be concluded in our next No.*)

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## STABILITY OF SHIPS.

### ALLEGED IGNORANCE OF ALL CONCERNED.

"BUT a further reason for not saying much here of the "losses at sea, is my firm and deep conviction that "ignorance is at the bottom of ninety-nine out of "every hundred of all the preventable losses that "occur; and this ignorance cannot be promptly cured by penalties. "It is now becoming understood, and owners and masters of "steamers are not only recognizing but insisting on the fact, that "capsizing from instability when carrying grain and other homo-"geneous cargoes, has been the chief cause of the loss of missing ships "and their crews for years past; and of this instability, probably "neither the owner, nor the builder, nor the underwriter, nor the "master, nor the mate, nor the crew, nor the Board of Trade (until "recently) ever dreamed. I have looked through the two huge "volumes of the Report and Evidence on Unseaworthy Ships, and

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'I cannot find that this horrible cause of loss was ever even sur-
" mised, or the word 'stability' mentioned throughout the whole
" course of that inquiry."

The above is a quotation from a letter signed by Sir E. J. Reed, K.C.B., M.P., chairman of Mr. Chamberlain's Load-line Committee, which appeared in the *Times* on the 18th March, 1884.

Sir E. J. Reed in this, as in everything he writes, expresses himself with precision, and goes straight to the point.

Here we have specific statements, as follows, viz.:—

1. Ignorance is at the bottom of 99 of every 100 of all preventable losses that occur.
2. Instability when carrying grain and other homogeneous cargoes has been the chief cause of the loss of missing ships and their crews for years past.
3. Of this instability the builders, owners, and crews never dreamed.
4. Of this instability the Board of Trade (until lately) never dreamed.
5. This horrible cause of loss was not even surmised by the Royal Commission on Unseaworthy Ships.
6. The word "stability" was never mentioned throughout the whole course of the inquiry of the Royal Commission on Unseaworthy Ships.

As regards the first of these heads, there are multitudes who will most cordially agree with Sir Edward Reed, who believe that ignorance is at the bottom of a great number of preventable losses. The view of the shipowner, however, is that this cannot be, for shipowners individually and collectively assert, and have always asserted that they know their business and do not need any Government department or any expert to teach them; and they say that error in judgment and carelessness rather than ignorance and incompetency are the cause of "preventable" strandings, collisions, &c., which go to make so large a number of preventable losses. The strength of argument against the Board of Trade, *in esse*, and equally against any scientific "load-line and stability department" *in posse*, would appear to be that the shipowner and the shipmaster, and the broker and the agent, know their business

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in every detail better than any department of the State possibly can. There are many who will think Sir E. J. Reed is right, nevertheless. Whether he is right or wrong, our only doubt arises on the point whether the way to lessen the existing admittedly great sacrifice of life (through the gross ignorance of the shipowner) is to put him in swaddling clothes under the care of a body of experts; or rather, whether it is not, to publish such valuable and exhaustive documents as the reports on the capsizing of the *Daphne*, made by Sir E. J. Reed himself, and the report on the capsizing of the *Austral*, made by the learned Wreck Commissioner, Mr. H. C. Rothery. We believe that the publication of such valuable documents, the result of the skilled labours of men of eminence like Sir E. J. Reed and Mr. Rothery, will in the end effect real good; which can never be effected by the establishment of any academy or institute of State aided professors at Whitehall Gardens or White Lion Court.

With the second of Sir E. J. Reed's statements we find ourselves most fortunate in being able wholly to concur. And with it we have no doubt that our readers will also unreservedly concur. Mr. Martell did real and good service several years ago, when he explained that a certain class of ships had come into existence which he characterised as "rectangular prisms." It had become patent several years ago that such ships were, as regards strength alone, fit to load deeply; but that when loaded with a homogeneous cargo they had no stability to speak of. Underwriters got wary of that style of ship, and sailors were drowned in it; and a matter of common observation some years ago was that until those "rectangular prisms" had disappeared, there was not any likelihood that the number of missing ships would greatly decrease. Some of them have yet to disappear; and disappear they will in due course, unless the action of the Registry Society, or the Load-line Committee, or the Board of Trade, should intervene; or unless the dissemination of knowledge similar to that propounded in the *Daphne* and *Austral* reports, and other scientific publications, should dispel and supplant the "ignorance" at present "enjoyed" by those who own, load, and navigate ships. We use the word "enjoyed" advisedly,

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on the grounds that ignorance has, as our readers are well aware, been "bliss" to persons whose ships have found their way to sea in an unseaworthy condition. We need not mention the cases, as they have been placed on record in State documents.

Sir E. J. Reed's third proposition is covered by and comprehended in his first. The owners of ships, builders of ships, masters of ships, crews of ships were, he urges, simply ignorant of the existence of instability, and therefore of the fact that a state of instability could in any way lead to loss. Of necessity then (this being so), they could never "dream" of a subject which, as he has shown, was outside the range of their perceptions physical, pecuniary, mental, and moral.

Granting, however, that Sir E. J. Reed is right as to the ignorance of builders, owners, masters, and crews, on this vital point of stability, it is only fair to point out that there were other persons who were not in the same ignorant condition. We find, for example, that on the 12th April, 1878, Mr. John Young Short, described as "a member," read a paper before the Institution of Naval Architects, the whole object of which was to show that the three-decked steamers then existing were unstable, and that the great end then to be attained was the securing of "stability" by the proper loading of existing ships, or the building of vessels of better proportions in future, that is to say, with less depth and a greater breadth. This Mr. Short was, we must assume, neither an owner, nor builder, nor master, nor seaman, nor a Board of Trade officer, but whoever he was, or is, he stands out by himself as an individual who understood the word "stability," and who, with more foresight than the Royal Commissioners on unseaworthy ships, did see in instability a "horrible cause" of loss.

On the fourth proposition of Sir E. J. Reed, viz., that the Board of Trade, until recently, never dreamed that the "instability" of a ship had anything to do with her loss, we are wholly without a guide. We are not concerned to champion the Board of Trade. Its President can defend his own officers if defence be necessary. We can only, in attempting to judge of what may have suggested or guided the action of any department, have recourse to the published results of the action of the department.

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The word "stability" has assumed a more comprehensive position, and at the same time a more definite and common use of late in matters connected with ships. We used to hear of ships as being "crank," or "tender" or "top heavy," and "turning turtle," &c., &c., now we hear of them as being "unstable." We do not venture to assert that the words "unstable" and "instability" do not include more than is covered by "top heavy" or "crank" or "tender," but we venture to think that a ship which is "top heavy" or "crank" or "tender" or which "turned turtle" in the common phraseology of the past, would also in the precise and scientific phraseology of the present be spoken of as having insufficient "stability," or as being "unstable." There is a Parliamentary paper, c. 2,625, 1880, in which an entry is recorded, that in 1874 a vessel listed and capsized because she was "crank," and the consequence was that 110 passengers and 13 of the crew were drowned; and the worst of it was that the master, who must we now learn have been "ignorant" on the question of "stability," was awarded three months' imprisonment for manslaughter, as the result of his culpable negligence in allowing his vessel to be "crank." The very next entry is that the Court found the loss of another vessel due to her "crankness" and the master putting too much weight on deck. And there are numerous other cases in that return which show that whatever ignorance as to "stability" may have existed elsewhere, there was none on the part of those who conducted the inquiries at that date. The return only goes back to 1873, but it may be assumed that that is far enough for present circumstances. As a simple matter of justice we must also record the fact that Mr. McFarlane Gray long ago fully investigated the subject in a report presented to Parliament, and then hit upon a plan which has only now to be adopted to settle the problems of stability on a satisfactory basis; and, also, that Mr. James Wimshurst now a Board of Trade officer and then the chief surveyor of the Liverpool Registry, made a report to his committee and a model for their use, showing the great dangers that had then, 1872, made themselves manifest by the want of stability in grain-laden ships. Furthermore, we must also mention a fact which Sir E. J. Reed, from personal considerations, could not himself afford

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to mention in his letter to the *Times*, and it is this, that however ignorant others may have been, he has long been fully alive to the subject of "stability;" for so long ago as 1872 in the journal named *Naval Science*, of which he and Dr. Woolley were joint editors, he not only "surmised" about it, but treated of it as an important factor in all questions of loading and load-line. As regards Sir Edward's conclusions, 5 and 6, as to the Royal Commission on Unseaworthy Ships, we are fortunate in having the report and evidence to refer to, and our conclusion on reading the two volumes is the direct reverse of that arrived at by Sir Edward. We think it right to point out that the Royal Commissioners did devote a paragraph to the subject.

Sir Edward J. Reed has done immense service in calling attention to this source of danger, and we do not think the fact that he, and officers of the Admiralty, of the Board of Trade, and of the Registry Societies, and other persons, were fully alive to the subject eleven years or more ago, in any way detracts from the value or merit of his present endeavours. It is, however, to be regretted that in the multifarious duties at present thrown on him he should not have deputed some person to look carefully into the history of the subject. Had he done so he would have discovered, and would, we are certain, have been the first to acknowledge that other workers in the field have already done much which may be the means of helping him to bring the question of stability within the region of "practical work" now in his able hands.

The following are a few Extracts from various Parliamentary Papers on the question of Stability:—

*Extract from Parliamentary Paper, C* 2,825, 1880.

"The *Lufra*, lost November, 1879, was overladen when she left port * * having regard to the construction of the ship for high centre of gravity and her consequent lack of *stability*. She was not qualified to carry a full cargo, or indeed such a cargo as she had on board, &c., &c."

*Extracts from Royal Commission on Unseaworthy Ships.*

"Mr. Charles Henry Jordan, 1st May, 1874.—Question 16,102.

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(Mr. Merrifield.)—A very great deal of ignorance has been displayed by shipbuilders in designing such vessels with a view to carrying those cargoes, which no doubt they have done in many instances, and it seems to me that they have taken no pains to consider the *stability* of those vessels under the conditions to which I have referred. I think that it should be a part of the duty of a shipbuilder to consider such things."

"T. H. Farrer, Esq.—2,099.—I speak with great hesitation on this point, because I am not practically acquainted with shipping, and do not profess to understand a ship, but when that question was discussed, it was told us that if those spaces were exempt from tonnage you would give the shipowner a temptation to build his ship a great deal too high out of the water, and to make a great deal too much top-hamper. I do not give any opinion of my own about it, but merely statements which I heave heard."

"Nathaniel Barnaby, Esq.—7,295.—There is the question of the *stability* of the ship, of which we have heard so much. The load-line of itself would not be a sufficient proof of the *stability* of the ship?—No, you may load the ship to her designed load-line, and she may be on the point of turning over through the way in which she is stowed.

"7,296.—Therefore, there may be a very *unstable* ship, although you have the mark of the load-line?—Certainly."

"7,391.—With reference to the question of *stability*, are not there two kinds of *stability*, one of them merely depending on the amount of force necessary to capsize a ship if applied to her in still water and slowly, commonly called the *statical stability*, and secondly, one which depends chiefly on a sudden application of force to her, that is to say, the extent to which she would oscillate beyond the position due to a simple heel by a steady force?—Yes, there are two kinds of *stability* which we commonly have to consider; first, taking the ship to be inclined steadily at some particular angle, with what amount of force does she tend to come to the upright, which we calculate for different angles; and there is another, which is the amount of force expended in completely capsizing the ship. Those two different aspects of *stability* are always considered in ships in Her Majesty's Navy."

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*Extracts from Select Committee's Report on Merchant Shipping*, 1880.

"Mr. Martell.— 5,214. — Question by Mr. Chamberlain.—I ask you again if you have made this exception in order to make patent the greater insecurity in one class of ships, why do you not intend it to the other class in which the same source of danger exists ? — The same source of danger does not exist, because the source of danger in a low freeboard in the two and three-deck ships may be as much from the want of *stability* as from the quantity of cargo placed in it ; but it is not from structural strength which has to be considered in the awning-deck ship."

"Mr. Martell.—5,241. — Has your attention been directed specially to the loss of grain ships for the last few years ?— Yes, particularly this last year ; I cannot say that my attention has been directed so much to grain ships in particular, but to steamers, more particularly during this last year ; finding a number of steamers had foundered, our attention was specially drawn to it, and our curiosity was awakened to endeavour to ascertain what the cause of this might be. On account of seeing these losses, particularly in one or two cases where the ships were known to have capsized, we undertook calculations to endeavour if we could ascertain whether the cause could be put down to the want of *stability*, and the result of these calculations were embodied in that pamphlet which, at his request, I sent to your clerk—a paper read by me before the Institution of Naval Architects (on 17th March, 1880)."

"5.245.—I suppose the ships are well found ?—The ships are perfectly strong and good, as far as our knowledge goes, and all our experience has shown, and we have no data of any kind whatever to lead us to a contrary conclusion that they are perfectly strong enough, but from their form and proportions, when loaded as some of them are, there is too small an amount of *stability* to enable them to contend with very heavy weather, and to run the risk of the grain shifting even very slightly.

"5,246.—I suppose those ships could only be made safe to carry grain by reducing the amount of cargo ; I mean to say they would be safe if they were not overladen ?—Perfectly safe if they were

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not overladen; that is to say, if they had less cargo in the 'tween-decks. There is no question about that."

"Mr. Farrer, 15th July, 1880.—6,033.—The shipowner loaded these high, and deep, and narrow ships, to the same point as he would have loaded a broad ship in comparison, and consequently the ship became top-heavy."

*Extract from Royal Commission on Unseaworthy Ships*, 1874.

"Barnaby, 7,399—400.—Change in masting *affecting stability* should be accompanied by a change of load-line: or reason against a general load-line determined by fixed rule."

"Mr. T. Gray.—11,920.—I also ought to tell the Commission that the great preponderance of opinion expressed in my office is against any attempt to fix a hard-and-fast load-line. We think that it would lead to greater evils than the absence of a load-line, because it would lead people to adopt some hard and fast rule, without reference to other more important considerations of safety."

"11,958.—Mr. Edgell.—As to the fact of so many grain-laden vessels from Odessa, referred to by his Grace, having been lost, do you consider that the captain being bound to put down the draught of the water in the official log-book is any guarantee of the seaworthiness of the ship?—I do not think it is, it may be; it is merely a record of one element of security.

"11,959.—I suppose you would admit that a vessel with a cargo of grain may be in good trim as to draught of water, but totally unseaworthy as to stability?—Distinctly."

"Mr. C. M. Wilson, M.P.—14,336.—When a vessel is in ballast it goes out with the compartment full of water, but when it comes home with cargo the space is empty, and then it is dangerous?—Yes, it is like a bladder to a man's foot when he is in the water."

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# THE LOAD-LINE AND ITS RELATION TO THE WAVE-LINE.

*To the Editor of the "Nautical Magazine."*

SIR,—The load-line appears to be at last becoming the question in shipping matters. The attempts that have been made by experts and those having authority to settle it, have been numerous. Sufficient to say that the failures have equalled the attempts. From Lloyd's Registry we have had three or four different Tables, all varying, and all in the direction of a diminished freeboard. From the Board of Trade there have been several also, and also varying. From other persons more or less authorised there have been others. As for several years past I have been occupied in inquiring into the question, and have made many experiments bearing on it, I venture to send you a short extract of the notes and documents I have collected and compiled on the subject.

I start with six propositions which may be considered as axioms. Some of them appear to have been disregarded by others who have discussed the matter.

1. The load-line should be placed below the limit of a vessel's floating power.

2. The floating power is represented by the displacement below the water-line at the moment when all buoyancy is expended.

3. No two vessels have exactly the same floating power; the diversity of forms prevents this.

4. The water-line by which the floating power should be measured should be a wave-line, and not a level.

5. The wave-line should be that formed by the most *dangerous* sea the vessel may be liable to experience.

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6. The position of the vessel on the sea should be that in which her displacement below the wave-line would be the least.

Given the above the object is to ascertain the floating power, and to do this it is necessary to know the nature of the sea.

When the nature, *i.e.*, the shape, velocity, and dimensions of the waves are known, it can be readily shown in which position the displacement below the wave-line would be least, and the amount of displacement at the time.

It may seem empirical to attempt to form a standard for such a fickle element as the ocean; but fortunately, the observations which have been made by scientific officers in the British and French navy are sufficiently conclusive.

The shape of ocean waves is generally admitted to be trochoidal.

The velocity of waves has been well ascertained, and varies in proportion to their length.

The length of waves is also tolerably well known, and the utmost limit they reach.

The height of waves has not been so well determined owing, doubtless, to the measurements having been sometimes taken when the wave had not reached its greatest height. Sufficient however is known to enable one to form a fair estimate of the average relative proportions, and it has been conclusively proved that as the length increases the proportion of height decreases.

Guided by the records of numerous observations, I have framed a table, No. 1, on the assumption that a wave 1 foot high is cycloidal, having a length of 3·14 feet, and that as the length is doubled the height is increased by one half. The result shows a near approximation to the average of recorded observations.

It would be obviously absurd to contend for the absolute correctness of this table, but I submit it as sufficient for a standard which would be the same for one vessel as for another, and if further observations show its inaccuracy it could be altered accordingly.

In Mr. White's Manual of Naval Architecture, a table of the relative velocities of waves may be found, showing that their speed ranges from 8 to 76 knots per hour according to their length.

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TABLE I.—OCEAN WAVES: THEIR DIMENSIONS AND FORMS.

As the length is doubled, the height increased by ½.

| Length. Feet. | Height. Feet. | Slope. Inches. |
|---|---|---|
| 3·14 | 1 | 1 in 1·57 |
| 6·28 | 1·5 | ,, 2·09 |
| 12·56 | 2·25 | ,, 2·79 |
| 25·13 | 3·37 | ,, 3·73 |
| 50·26 | 5·06 | ,, 4·97 |
| 100·53 | 7·59 | ,, 6·62 |
| 201·06 | 11·39 | ,, 8·82 |
| 402·12 | 17·08 | ,, 11·80 |
| 804·25 | 25·63 | ,, 15·69 |
| 1,608·49 | 38·44 | ,, 20·92 |
| 3,216·98 | 57·66 | ,, 27·89 |

What is the position of a vessel on the waves in which her displacement below the wave-line is least?

Broadside on to the wave the wave-line is nearly a straight line as in still water; and as the water-line may then be raised almost to the deck line without submerging the vessel, this is the position in which the displacement below the water-line is greatest.

As the vessel inclines from this position the wave-line forms a greater curve on the vessel's side, diminishing the displacement, and when she gets end-on to the wave the curve is at its greatest, and the displacement below it the least.

Next what is the wave most *dangerous* for a vessel to encounter? It is not necessarily the largest wave.

We have seen that the position of least displacement is end-on to a wave.

When a vessel is in this position on a wave longer than herself, the slope of the wave being less than that of a shorter one, the curve on the vessel is not so great as it would be were the wave of the same length as the vessel, and if the wave were shorter than the vessel the height of the wave would be less. In either case the displacement below the wave-line is less than it would be when she is end-on to a wave of her own length.



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This can be readily seen by constructing a diagram of a vessel's profile, and laying on it a water-line of a wave of her own length, and also other water-lines of waves longer or shorter than the vessel, the one having less proportionate height and the other greater.

We have now to find the position of least displacement when end-on to a wave of the vessel's length, with the crest of the wave at the deck-line. This will vary with the vessel's form and superstructures. In flush-decked vessels it is always in one of two positions, either when the crest of the wave is at or near the middle line of the ship, or when it is at her ends.

In vessels with poop and forecastle it is always when the crest is at the middle line.

In vessels with poop, forecastle, and bridge-house, it is found in two positions abreast the exposed parts of the deck, viz., broad on the bow and on the quarter.

In so-called single well-deck ships it is always on the broad of the bow.

Having settled the position of least displacement, it is only required to calculate the displacement below the wave-line to find the limit to which a vessel may be loaded without any part of the deck being submerged.

As no deep laden vessels are loaded so as to ride over the wave without their decks being liable to be submerged by the crest of a wave, it is necessary to proceed further, and ascertain to what extent it may be submerged without exceeding the limit of her floating power.

To do this, the wave-line must be raised above the deck at the position of least displacement, and the displacement below the wave-line and submerging deck then found.

At that displacement, the position of the wave must be found with the vessel in other positions on it. A curved line connecting the crests of the wave at the several positions will represent the passage of the wave's crest past the ship's side. It will then be seen what portion of the deck becomes submerged during the wave's passage. When the portion submerged equals the portion above the wave-line, the limit of floating power is approached.

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This is assuming that the water is got rid of off the deck as rapidly as it is deposited on it. (A very liberal assumption.)

With vessels having superstructures extending to the sides, and protected at the ends so as to resist the ingress of water under them, it is sufficient to find, if the exposed submerged portion of deck is, during wave's passage, as long above the water as under it.

The above conditions satisfied, measure the water liable to be deposited on the deck by the length × the mean height × breadth of deck, less hatchways and other deductions.

Measure the least displacement of that part of the vessel above the wave-line and below the deck, at any part of the wave's passage, and if it equals the weight of water above found, the limit of floating power has been reached.

Spar-deck vessels may be treated so as not to have any of the deck submerged.

Having ascertained the limit of floating power, it remains to be settled what proportion of a vessel's displacement should be allowed for spare buoyancy.

It is no doubt certain that a vessel is subject to considerable increase of immersion caused by her fall from the crest to hollow of a wave. Captain Motley proved that there was an increase of 25 per cent. in the weight of an object in the hollow, and a like decrease when on the summit of a wave. I have made experiments with a spring balance on a fly-wheel with a similar result, but I have also found by experiment with a hygrometer floating in a vessel of water that the change of weight shown by the spring balance is felt by the water as well as the object, and that there is no change of immersion due to this. Be this as it may, an allowance for spare buoyancy should be deducted from the displacement representing the limit of floating power.

I submit that the foregoing deals with the load-line as follows :—

It enables each individual vessel to be treated on her own merits.

It makes special allowance for superstructures, provided they are of sufficient strength and water-tight. Each in its own place as it comes into play as a floating power.

If the difference in form between vessels is above her light load-line, measuring by the wave-line assigns the correct value to each.



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If the difference is in the bottom, the percentage for spare buoyancy will correct that. The amount of that percentage is a matter of opinion rather than calculation and may be settled by arrangement.

Several slight modifications would be required in working out the details of the foregoing method, to explain which would require too much space in your pages. They would not affect the principle of the method.

I am Sir, yours obediently, W. P.

## SOME REMARKS UPON OCEAN NAVIGATION,

WITH A PROPOSED METHOD OF FINDING A SHIP'S POSITION AT ANY HOUR OF THE NIGHT. BY CHAS. S. HUDSON, CHIEF OFFICER IN THE UNION CAPE MAIL SERVICE.

THE great advance which has been made during the last quarter of a century in the speed of vessels, and the necessity especially with mail ship companies, to run their ships, not only with speed, but also with regularity, makes a great demand upon the ability of the navigational officers. Passages of many thousands of miles are now counted by hours and minutes instead of by days as formerly, and if good passages are to be made, little margin is left for "heaving to till daylight." Ports must be made and entered by night as well as by day. Therefore correctness is required in the ocean position, and any method that will assist the navigator in at any time being able to find his position, is of much value; and its value is enhanced in proportion to its simplicity.

It is a question if navigators are not inclined to walk too much in an old and well-worn track, and are wrong in showing disinclination to adapt themselves to the newer circumstances arising. Old seamen remembering possibly the little trust that was to be placed in chronometers many years ago, will still tell you that there is nothing to equal lunars in finding the position of the ship; now lunars, as practically taken at sea, cannot be depended upon within some miles, and for close navigation they are not suitable in application; but possibly when chronometers were not very perfect,

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and an opportunity for rating them by sight of land might not occur for a couple of months, the navigator of those days was right in pinning his faith upon his lunars.

The materials now to hand for navigation are altered; it may be taken as an undisputed assumption, that by the improvement in time-keepers, the correct Greenwich time is, or ought to be always known on board well managed steamers; and this being the case I would submit that reliance should not be placed solely upon the a.m. or p.m. sights with the noon latitude, but that other problems should be also brought into common use for the navigation of the ship.

In the position found by the meridian altitude of the sun with sights either before or after noon, the problem depends for one of its elements upon a D. R. course and distance run, of perhaps 40 to 50 miles. No chain is stronger than the greatest strength of its weakest link, and the dependence to be placed upon this D. R. run when we take into consideration, error in logging, bad steering, possible current, or incorrect deviation, is, to say the least, very uncertain; and as higher latitudes are approached, where an error in one mile of latitude makes a much greater difference in the worked-out longitude, most serious errors may arise between the assumed position of the ship and the true one.

Another problem for finding a ship's position at sea by the sun, is gradually creeping more into use, but not half so much as its value deserves. I mean Sumner's method of finding the vessel's position by two altitudes of the sun, and a course and distance run in the interval; and in speaking of this problem I cannot do better than quote the words of Staff-Commander J. C. Richards, R.N., who says:—"It is not too much to say, that it is one of the most valuable methods ever discovered for finding a ship's position at sea." But in this problem, also, the same as in the older one of sights and a noon latitude, the like error that is before mentioned is possible to occur, but it could not amount to such an extent.

Now, upon the principle of Sumner, as laid down, if at any hour of the night the altitude of a star is taken, and the chronometer time noted; or, what is much better, if a mean of altitudes are taken with the accompanying Greenwich times; then with an

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approximate latitude the longitude may be found, which, with the true bearing of the star, gives a line of position; and, if at the same time or immediately afterwards, the like observations of another star are taken, differing in its bearing from the first star, as near as can be to eight points, another line of position may be found; where these two lines intersect, is the true position of the ship.

There is no possible element in this problem where error can arise, excepting that which may occur from the incorrectness of observing the altitude of the stars; and it will be found in practice, that with a good horizon, the position of the ship, as found by this method, may be depended upon as absolutely more correct than the position found by the usual a.m. or p.m. sights and a noon altitude; for if stars are chosen with quick rising altitudes, one mile of arc in the observed altitude will only affect the longitude to about a like amount; whilst, in the latter and older method, there is not only the possible incorrectness of altitude to deal with, but the much greater error that may arise from the D. R. run being different from the True run.

I am quite aware how seldom stellar observations are taken, and when taken, what small confidence is generally placed in the observation, but the correct taking of star altitudes is merely a matter of practice, the same as it is with the sun. I have found as far superior to any star telescopes a plan of using a pair of night-glasses. Bring the star to the horizon, with the sextant having no telescope affixed, and, then holding the instrument in the right hand, hold the night-glasses in the left so that the line of sight through the barrel of the glasses, that is to the right eye, passes through the sight-ring and the horizon-glass of the sextant, and a much magnified star will be observed: the line of light passing through the left barrel of the glasses, goes clear of the sextant, and together with the right barrel gives a most defined horizon. Observations taken of stars in this manner should not vary from the truth more than one mile of arc. When taking stellar altitudes, it is a good plan to place the index on the sextant a few minutes of arc, either greater or less as the case may be, than the altitude to be observed, and then looking at the horizon to mark the time when the star cuts it.

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In navigating on the East Coast of Africa, where currents are swift and irregular, in the narrow waters of the Mediterranean, and in high latitudes, especially when the sun is in opposite declination and alters its altitude too slowly for any observations of time at ship, I have found this method of great service. It has the advantage of being able to be taken at any time of the night in clear weather, and last, not least, the work is with slight variation the same as that of morning sights, and in which every one is well practised.

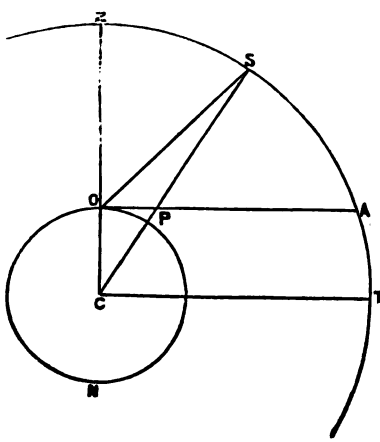
Connected with the problem of finding the position of the ship by Sumner's method, either with the sun or with the stars, it is probable that the whole of the calculations might be dispensed with, and superseded by the use of a terrestrial globe and a pair of dividers.

I am prepared with all humility to find the impracticability of it pointed out, but the subject is so exceedingly taking in its possible simplicity that I am tempted to proceed.

Any celestial object is at every moment of time exactly over some spot upon the earth's surface. In the case of the sun this spot may be at any time defined by taking as latitude the then declination, and for longitude the period a watch keeping Greenwich time shows from noon, turned into arc.

In the case of a star the latitude is always the declination, and the elements of Greenwich mean time, siderial time, and the R. A. of the star will give its longitude.

If at any time the altitude of the sun or a star is taken, the complement of the true altitude is the arc of the heavens between the object observed and the zenith, as also between the point of the earth exactly under the object and the observer; for instance, in the following figure, let O, P, N be the earth, with C its centre. O, an observer, with S, the star or sun. Observe then Z will be the zenith, S, O, A the apparent alt., S, C,

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T the true altitude, and Z, C, S the co-altitude. P will therefore be the point upon the earth exactly under the object observed, and as the arc O, P is equal to the arc Z, S, the distance measured on the earth from O to P is equal in amount to the co-altitude.

Taking a Mercator's chart, and with the delineation of the sun as *nil*, let an altitude of it be observed and the Greenwich time noted. Then to define the spot upon the earth over which the sun at the moment of observation is, you will have for latitude the equator, as there is no declination; and the time shown as before, Greenwich, noon, turned into arc, will be longitude east; with a pair of dividers measure at the top or bottom of the chart, scale the amount of the co-altitude, and with this distance and one leg of the dividers on the spot before defined, the other leg will cut the equator to the westward at the position of the ship. Charts being upon a flat surface and distorted, this rule will only hold good upon them when both observer and the object observed are upon the equator and the declination *nil*.

Now, with a terrestrial globe before us, let the altitudes of two stars, A and B, be observed, and G. M. T. noted; and as in manner before mentioned let the latitude and longitude of the spot upon the earth's surface under each star be found, and let us mark these spots upon the globe and name them A and B respectively.

Upon the scale of the equator of the globe, measure with the dividers the co-altitude of the star A, and with this distance and one leg of the dividers in the point A, describe a portion of a circle in the neighbourhood of the D. R. position; measure the like co-altitude of the star B, and from the point B describe another portion of a circle in the same neighbourhood: where these two circles intersect one another is the true position of the ship.

The two stars observed should be as near eight points apart as can conveniently be taken, and their declination should not be greater than say 50°, or else the flattening of the polar regions of the earth may interfere with the correctness of the circles described.

It must be granted that this is a most simple method by the side of the usual calculations for a like purpose; and it could also be utilized for taking lines of position by the sun when approaching

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land; which line might be defined within a few minutes of taking the altitude.

A globe of sufficient scale would be impracticable to carry, but it should not be beyond the ability of globe makers to make the section of one containing 70° of longitude, and from 10° one side of the equator to 60° the other side of latitude; upon a scale of "deg. = 1½ inch." on the equator, this would not be too bulky and would be sufficient for all purposes.

The degrees of latitude should be marked, but the degrees of longitude left blank to fill in at will.

CHAS. L. HUDSON.

December, 1888.

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## OUR PARLIAMENTARY RECORD—SESSION 1884.

*Fishing Vessels' Lights.*—In the House of Commons on Thursday, February 7, 1884, Mr. BIRKBECK asked the President of the Board of Trade "whether the Joint Committee on Fishing Vessels' Lights had agreed to carry out the recommendations of the Select Committee of 1880 in their entirety as regards trawlers carrying one mast-head light when trawling."

Mr. CHAMBERLAIN in reply, said: "The Select Committee of 1880 reported as follows:—'Your Committee therefore recommend that article 10 of the new regulations should be revised so as to satisfy the fishermen's desire to be relieved from carrying coloured side-lights while at work, and to retain the use of the white light while engaged in fishing, and at the same time secure the use of a distinctive mark by drift-net fishing boats to distinguish them from trawling smacks.' The Joint Departmental Committee were again directed to meet and consider this among other points. There were laid before them the report of the Select Committee, and also a number of reports which had been obtained in the meantime from representatives of the shipping interest and of the fishing interests and from foreign Governments. Abstracts of these were laid before Parliament in 1882. The Departmental

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Committee were assisted by representatives of the shipping interest deputed for the purpose, and with their aid and concurrence recommended that trawlers should use a white light with a red light above it to distinguish it from a pilot light. The rules recommended by the Joint Committee are now under the consideration of foreign Governments."

*Wreck on Plymouth Breakwater.*—On Friday, February 8, 1884, Mr. LEA asked the President of the Board of Trade "whether his attention had been called to the narrow escape from loss of life through the recent wreck of a vessel on Plymouth breakwater —whether it was true that the lighthouse keepers on that occasion sent up rockets at ten o'clock, and after, during the night, and used every expedient in their power to attract attention, and that no notice was taken until their distress flags were observed next day; and whether he had yet decided upon the advisability of connecting lighthouses by cable with the shore."

Mr. CHAMBERLAIN, in reply, said: "His attention had been called to this matter, and the facts as stated in the question were substantially correct. The honourable member was probably aware that the shipwrecked crew were received into the lighthouse about ten o'clock, and when the rockets were sent up the crew were perfectly safe. Consequently, the rockets not being seen did not in any degree add to their danger. With regard to the last part of the question, I have to say that there is now in existence a method of connecting lightships with the shore, but certain mechanical difficulties have intervened, and have not yet been overcome."

*Violent Deaths at Sea.*—On Monday, February 11, 1884, Mr. CRUM asked the President of the Board of Trade "whether the list of 1,123 cases, reported to the Registrar-General, of seamen who were drowned during 1881-82, by accident other than wreck, had been printed; and, if so, when it would be issued to the public."

Mr. CHAMBERLAIN in reply, said: "He did not find there was published any detailed list of the cases of accident by drowning other than by wreck published in the Registrar-General's returns. He would endeavour to obtain some information on the subject, and would communicate it to the House."

*Dublin Local Marine Board.*—In the House of Lords, on

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Thursday, February 14, 1884, Viscount MIDLETON rose to move for copies of the correspondence which had taken place between Mr. R. A. Penrose Fitzgerald and the Board of Trade, and to ask the Government why Mr. Fitzgerald's name had been removed from the Marine Board at Cork. The noble lord said "that Mr. Fitzgerald, who was a magistrate of the county and a deputy-lieutenant, had taken a deep interest in nautical matters, had passed examinations, and held certificates as a mate and a master. Before being nominated to the Cork Marine Board he called upon the Board of Trade to ascertain what the duties were, so as to consider whether he could discharge them, living as he did at a distance of 23 miles from Cork by rail. He was told that the duties would be mainly of a consultative character, and that he would be referred to as occasion required. With that explanation he accepted the office, the small remuneration of which he had handed over to the Cork Sailors' Home. The first intimation he had received of dissatisfaction was conveyed in a circular removing him from the Board. It would require a very explicit disclaimer to satisfy the public mind that his removal was not due to political motives, as he was the accepted Conservative candidate for Cambridge, while Mr. Parnell was consulted as to the appointment of a successor. The President of the Board of Trade held peculiar views as to the qualification of gentlemen to fill public offices, for he had described as one who neither toiled nor spun a noble lord who had devoted his life to the public service, while he covered with inflated eulogy another noble lord who had recently entered on public life, and was better known out of the House than in it. These things made it necessary to inquire why he had summarily dismissed a gentleman from an office in which he was eminently useful."

Lord SUDELEY in reply, said: "He thought he could give a different complexion to the matter. There were seventeen Local Marine Boards in the United Kingdom, each consisting of ten members, six selected by the shipowners and four nominated by the Board of Trade. The appointments were for three years, the whole Board being elected triennially, and all appointments made at intervals to supply vacancies terminated with the others.

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February, 1884, was one of the triennial elections. Mr. Penrose Fitzgerald was nominated by the Board of Trade as a member of the Cork Local Marine Board in 1878, and re-nominated in 1881. The Board of Trade recently decided not to reappoint any Board of Trade nominee who had not kept up his attendances, and a circular had accordingly been issued by the Board of Trade to those of their nominees (some twenty out of a total number of sixty-eight) who had attended fewer than one-third of the meetings of their respective Local Marine Boards in 1883. This circular stated that the Board of Trade did not propose to reappoint, as they concluded that 'Your engagements do not admit of your frequent attendance.' Mr. Penrose Fitzgerald, not having attended any one of the thirteen meetings held by the Cork Local Marine Board in 1883, received one of the circulars, and had at once written to the Board of Trade (at the same time communicating with the Press), reminding Mr. Gray, the Assistant-Secretary of the Marine Department, that at the time of his appointment Mr. Gray stated in a personal interview that attendance at all the meetings was not so much desired as that the Board of Trade nominee should be ready to forward information to the department. Mr. Gray's recollection of the interview confirmed this statement, but far from attending all, Mr. Fitzgerald had not attended one meeting in 1883. It was not alleged that Mr. Fitzgerald had been prevented from attending by ill-health. The decision of the Board of Trade upon the general question was come to after careful consideration, but in the particular case under discussion, the Board of Trade believed Mr. Fitzgerald to be thoroughly competent to perform the duties attached to the appointment. The circular stated merely that the Board of Trade did not propose to renominate, as it was concluded that the nominee to whom it was addressed was too much occupied to attend the meetings of the Local Marine Board. If, however, any nominee replied that he had been prevented by illness or other cause from attending, and was able and willing to perform the duties attached to the appointment, the Board of Trade was quite prepared to reconsider his case. (Hear, hear.)"

The motion was withdrawn.

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In answer to Viscount MIDLETON,

Lord SUDELEY said: "There would be no objection to lay the correspondence on the table. But it only consisted of one letter from Mr. Fitzgerald and the circular."

*Overcrowding of the Orient Company's Steamer.*—In the House of Commons, on Thursday, February 14, 1884, Mr. STUART-WORTLEY asked the President of the Board of Trade "whether complaints had reached him of overcrowding on board the Orient Steam Navigation Company's steamship *Warwick Castle*, which sailed from Plymouth for Sydney on January 19 with over 600 emigrants; whether the ship underwent before sailing any, and what, official inspection with a view to insuring the sufficiency of accommodation for that number of emigrants; whether the ship was of any more than 2,000 tons burden; and whether he would order a further and more searching inspection to be made as soon as might be after the ship's arrival at Sydney."

Mr. CHAMBERLAIN in reply, said: "The vessel referred to by the hon. member appears to be the *Warwick*, which has been chartered by the Orient Steam Navigation Company, and sailed from Plymouth for Sydney on January 19. This vessel is entitled under the Merchant Shipping Acts to carry 632 passengers, and under the Passenger Acts to carry 586 statute adults. On the previous voyage there were 623 passengers on board, equal to 515½ statute adults. The net registered tonnage of the vessel is 1,648, the gross tonnage 2,527. The vessel underwent before sailing the usual official survey and inspection, and no complaints as to overcrowding have reached the Board of Trade. The Board of Trade have, however, communicated with the Agent-General for New South Wales, and have suggested that the vessel should be inspected on her arrival at Sydney and the result reported."

*Mr. Chamberlain on Over Insurance.*—On Monday, March 3, Mr. COWEN asked the President of the Board "if the following extract from his speech at Birmingham was correct:—'When I was at Newcastle the other day the shipowners told me that over insurance was altogether uncommon. It is not uncommon. I say it deliberately, speaking in the due sense of the responsibility, that it is the commonest thing in the world. I have overwhelming proof that

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in a great number of cases the loss of a ship is actually a source of profit to the owners. Why, even in Newcastle I had an illustration of it. In the very short time I stayed there I met a gentleman who said, "A few days ago I was speaking to the manager of a large steamship company, and I asked him what sort of a season he had had, and his reply was, we have been very unfortunate, we have had no losses;" ' and if so, whether he was able to substantiate that statement."

Mr. CHAMBERLAIN: "The extract from my speech appears to have been reported with substantial accuracy. I find that there are two statements in that extract. In the first place, there is a statement that I had a conversation in Newcastle with a gentleman there. As to the fact of my having had that conversation I have nothing but my own word for it, which I hope the hon. member will think sufficient. The hon. member then asks me a question as to my statement respecting over insurance. In regard to that statement I have to say that I have a great mass of information upon the subject which I hope to lay before the House on the second reading of the Bill, which I believe will carry conviction to every impartial mind." (Hear, hear.)

Mr. COWEN said "the form of his question had been altered by the Clerk, and did not quite express his meaning. He wished to know the name of the manager who had made the reply he had quoted, and which suggested that the manager had been guilty of a criminal offence."

Mr. CHAMBERLAIN: "I have no information on that subject, and I do not myself know the name of the managing owner. I take it rather as an illustration than as a fact—(Oh, oh)—of the opinion prevalent among the shipping class."

Sir H. MAXWELL asked "whether the President of the Board of Trade did not consider that in concealing the name of this person who had been guilty of a criminal offence he was conniving at the act."

Mr. CHAMBERLAIN: "I do not know the name of the person."

*Explosives on Sea-going Vessels.*—On Tuesday, March 4, Mr. FINDLATER asked the President of the Board of Trade "whether any complaints had been made to the Board of Trade as to the great danger arising from the packing of gunpowder and other explosives

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for sea-going vessels in copper magazines with fuses introduced therewith; was not such packing the cause of the explosion which took place on board the *Aberdeen* on Saturday last at Gravesend, although the examiner of the Board of Trade a short time before examined the magazine and pronounced it all safe; or, if no such complaints had been made, could he state whether any report of the causes which occasioned the before-mentioned lamentable accident had been furnished to the Board of Trade; and, if not, would a full inquiry be at once instituted into all the circumstances."

Mr. CHAMBERLAIN: "I have no complete information as to the circumstances mentioned in the question of the hon. member, but the matter is one which deserves full consideration. I have therefore communicated with the Home Office on the subject, and I believe my right hon. friend will order that an inquiry shall be made, and it will be conducted by Major Majendie." (Hear, hear.)

*Fishing Vessels and the Merchant Shipping Bill.*—On Friday, March 7, Mr. BIRKBECK asked the President of the Board of Trade "whether fishing vessels would be exempted from the provisions of the Merchant Shipping Bill."

Mr. CHAMBERLAIN: "Yes, Sir; they will be exempted from the provisions of the present Bill, but if the fishermen or smack-owners should desire that any portion of the Bill should be applied to their industry, that can be most conveniently done by a subsequent measure."

*Loss of Life at Sea.*—On Monday, March 10, Lord C. HAMILTON "wished to know what were the *data* on which the President of the Board of Trade based his statement in a letter to the Birmingham Trades' Council that the loss of life in the shipping trade would probably in the next two or three years be greater than it ever was before."

Mr. CHAMBERLAIN: "The subject is one which it would be more convenient to deal with in argument than in answer to a question. But, stated briefly, my reasons for the opinion which I have formed are these: for some years shipowning has been the most prosperous and most profitable industry in the country. This has led to an over-production of ships. The supply has not exceeded the demand

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and over-production has been followed by over-competition, with a great reduction in freights, which are now in many cases unremunerative. If the practice of over-insurance continues, the result must be that the loss of a ship will to a greater extent than ever be an advantage to the owner. The tendency of this, coupled with the necessity for strict economy in all the items of ordinary expenditure, will be to bring about a relaxation of the precautions necessary to secure safety, and other things being equal, will lead to increased loss of life and property. This is my firm conviction, and it justifies my anxiety for immediate legislation." (Cheers.)

Lord C. J. Hamilton asked "whether it was not a fact that the returns issued by the right hon. gentleman's own department showed for 1882 a much smaller loss of life than in the previous year. He also inquired whether the average loss in the last five years was not less than the average loss in the previous five years."

Mr. Chamberlain: "To answer those questions fully I must engage in more particulars than respect for the time of the House would justify. But I may say that the first statement of the noble lord is correct. The loss of life in 1882 was somewhat less than the loss of life in 1881; but taking three-yearly periods, the loss of life in the last three years was greater than the loss of life in any three years to which the statistics apply. On the other hand, there is no doubt that there has been an increase rather than a diminution in the loss of life during recent years."

Mr. Norwood subsequently rose and said: "I wish to ask the President of the Board of Trade whether I correctly understood him to say something to this effect—that in his opinion the unremunerative state of the shipping trade at the present moment will have the effect of inducing shipowners in the next two or three years to over insure their ships with the view of causing them to be lost for their own benefit, and by that means risking the lives of seamen. I wish to ask the right hon. gentleman whether he adheres to that statement." (Opposition cheers.)

Mr. Chamberlain: "No, Sir, I did not say anything of the kind. (Murmurs.) I will repeat the exact words I used in answer to the noble lord's question." The right hon. gentleman then proceeded to read the latter part of his reply, as already reported.

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*Lloyd's Return of Ships and Property lost and Insured.*—Mr. WHITLEY asked "whether the Government would print and circulate among the members of the House the statement of all ships lost during the year 1883, together with the amount in insurance effected on shipping freight, and cargo respectively, as furnished by the Committee of Lloyd's."

Mr. J. HOLMS: "The statement in question is, I assume, a return of ships reported to Lloyd's as lost during the year 1883, with various particulars as to insurance and other matters. It is given by Lloyd's Committee to the Board to be used by them as confidential, and cannot be published without the consent of Lloyd's Committee. It is as yet far from complete, and from the cursory examination the Board of Trade have been able to give to the parts of it submitted to them it will need much examination and correspondence before it is in a complete state."

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RUSSIA.—GULF OF FINLAND.—*Pilot Regulations.*—Since October 1, 1883, all pilot stations in the Gulf of Finland are provided with lanterns having red and white shades, and it is prescribed that pilots going out to vessels during thick weather shall show their lantern, presenting alternately the red and the white faces. These pilots are expected to conduct vessels to their destinations during the night, but only when they can do so with security; when the contrary is the case, they are to pass the night on board and wait for day-light before proceeding with the vessel.

CEYLON.—COLOMBO.—*Alteration in Time Signal.*—The following alteration has been made in the time signal at Colombo:—The signal is now made by a semaphore (painted red and white, in bands) on the flagstaff at the Master Attendant's office, which is raised to an angle of about 45° at 4h. 10m. p.m.; horizontal at 4h. 13m.; and dropped at 4h. 15m. p.m. Colombo mean time—equivalent to 22h. 55m. 37s. Greenwich mean time. Time is transmitted to Colombo by electric telegraph from the Madras observatory daily at 4h. p.m., by which the semaphore time is regulated. The signal is not made on Sundays or public holidays.



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# CORRESPONDENCE.

## TRADES' UNIONISM AMONGST SEAMEN AND SEAMENS' LODGING HOUSES.

*To the Editor of the "Nautical Magazine."*

SIR,—The very interesting article that appeared in your February number on Trade Unionism amongst seamen, induces me to ask your permission to occupy a small portion of your valuable space, in order to call the attention of your readers to the beneficial results that may be obtained, if a certain class were admitted as members of the Seamen's Protection Society, who until recently have been looked upon with a certain amount of prejudice and disfavour by the seafaring community—namely, the respectable portion of boarding-house keepers. Setting aside a certain section of low and dissolute persons, who assume the name of boarding-master, in order to hide their base designs and despicable practices, I think I am justified in asserting that the honest boarding-house keeper who receives and provides for Jack at such times when he is destitute and without employment, is amongst the truest friends the sailor has; besides that the great majority of those people are practical seamen, and therefore intimately acquainted with the requirements and habits of their lodgers. The recent efforts that have been made by associations, whose aim it is to assist the shipping interest, and to benefit the seafaring community in particular, have been recognised by the leading shipping papers, and all influential owners and brokers at our port have, in spite of prejudice and tradition, been compelled to acknowledge the important services rendered to them by the members of our Society in preventing the outward desertion and consequent detention of vessels, but unfortunately for themselves, the officers of the British Seamen's Protection Society have rejected the offer of an honest and deserving class, to become members of their association, thereby refusing that essential support, which in cases of emergency, would enable them to carry the object in view. Although thousands of the more respectable class of seamen, who make their homes at those establishments, where they are received almost as members of the family, can bear testimony of

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the just dealings and good intentions of a great number of boarding-house keepers resident at the different ports, no attempt has been made by the Board of Trade, notwithstanding repeated applications, to assist those people in their efforts to do that which is right and just, and by giving them a practical and beneficial license, crush all those low and infamous places of resort, which, in common with others, are known as boarding-houses. If any doubt should exist as to the sincerity of our motives, the fact that the Cardiff Boarding Masters' Guarantee Association has for the last three years advocated a system, which gives the seaman the option in cases where he is not justly dealt with, to correct or to repudiate his bill at the moment of sailing, ought to convince even the most prejudiced reader; the members also give a guarantee to repay any money that might have been paid on behalf of seamen in cases of desertion, and the treasurer of the Society has honestly and promptly paid all claims to shipowners in such emergencies. Such conduct has not been without bearing some good results, as only recently Mr. Thomas Gray recognised the Society as a respectable body, who are fulfilling a useful function in the shipping interest; other prominent Board of Trade officials have expressed their strong approval of the aims of the Association; so taking cognisance of all those matters, it is difficult to understand why a certain section of seamen should be slow to recognise the importance of combination with such a body. It must be evident to all practical persons, that in cases where higher wages, or an improvement in the provision scale, &c., are demanded, the great bulk of the seafaring men who frequently are improvident, though honest and brave, must without substantial aid submit to the terms of their employers; but let each port produce a number of energetic boarding-house keepers of the better class, who should be recognised as members of the Seamen's Protection Society; let the men be supported with food and necessaries for one single week in those emergencies referred to, and the united efforts of the two classes, so intimately associated, must be crowned with success. Apologising for trespassing upon your valuable space, I remain, sir, your obedient servant.

A SAILOR'S FRIEND.

Cardiff, February 23, 1884.



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## OUR LIBRARY TABLE.

The various *Notices to Mariners* and *Hydrographic Notices*, issued by British and foreign governments will be found in the usual place.

A pamphlet on the proposed Tehuantepec Ship Railway shows that the Committee on Commerce of the United States Senate strongly advocated that the United States Government should take up the project, but that the Senate would not take any action upon the recommendation. Mr. Eads appears to have obtained a valuable concession from the Mexican Government, and he now seeks support from those who have faith in the success of the undertaking. The pamphlet contains an interesting summary of the opinions of many notable engineers and naval architects, and is an effective advertisement of the scheme and the company which is formed, or to be formed for the purpose of carrying it through.

*Manual of Shipping*, by Robert Thubron (London: Norie and Wilson), is a book of reference in connection with the shipping, railways, canals, docks and manufacturing industries of the United Kingdom, and contains information chiefly useful to shipbuilders, shipowners, dock and harbour commissioners, and merchants.

*Sixteenth Annual Report of the Department of Marine and Fisheries* (Ottawa), is a general statement of the maritime progress of the Dominion for the year ending 30th June, 1883: it appears that the various provinces now maintain 484 light-stations, 578 lighthouses, 23 fog-whistles, and 9 automatic fog-horns. The Dominion has also gone a step in advance of us at home, inasmuch as it is required that certificates of competency or service shall be held by masters and mates employed in navigating the lakes, or engaged in the coasting trade between Quebec and the lower ports, or in the coasting trade between Canada and a port in the United States; a series of observations is also now being carried on at several of the lighthouses in the Gulf of St. Lawrence, and some on the Nova Scotian coast, for the purpose of completing weather maps, and thus assisting in the study of the weather of the gulf.

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*List of Lighthouses, Lighted Beacons, and Floating Lights on the Atlantic, Gulf, and Pacific Coasts of the United States* (Washington), corrected to January 1, 1884; the list comprises 575 notices of lights, and the descriptions and remarks are very succinctly condensed; the bearings are *magnetic*, but we hope that, at an early date, the Lighthouse Board will see its way to introduce *true* bearings, as is now done by the Hydrographic Bureau of the States.

The books, pamphlets, and papers on our table are as follow:—*The Science Monthly* (London: D. Bogue), for March, designed by its style to interest the general reader, contains a good deal of practical science condensed in a small compass. *Van Nostrand's Engineering Magazine* (New York), for March, contains no article especially nautical, but there are several valuable papers in the departments of physics and engineering. In the *Scientific American* (New York), numbers for February, will be found the usual abundant quota of practical information connected with art, science, mechanics, chemistry, and manufactures. *Revue Maritime et Coloniale* (Paris), for March, contains the report of the scientific voyage of the *Talisman* in 1883, and notes on the winds off Cape Horn. *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft II., 1884, in addition to the usual nautical information, deals with hailstorms, compass compensation and the volcanic eruption in Sunda Strait. *Mittheilungen aus dem Gebiete des Seewesens* (Pola), Nos. I. and II., 1884, gives its usual quota of nautical notes, together with valuable papers on great circle sailing and the law of storms. *Revista della Marina Mercantile* (Trieste), for March, in addition to its general papers continues its observations on the recent progress of nautical science and its application to practical navigation. *Boletin de la Sociedad Geográfica de Madrid*, for December, gives articles on the Spanish possessions in the Gulf of Guinea, and the recent volcanic disturbance in Sunda Strait.

We have also to hand the latest numbers of *Hansa*, *Das Schiff*, *Le Yacht*, *l'Avenir Militaire*, *Forest and Stream* (U.S.), the *New York Maritime Register*, the *Nautical Gazette* (U.S.), the *Marine Journal of Cincinnati*, and the *San Pedro Shipping Gazette*.

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# TIDE TABLES FOR APRIL, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | London Bridge. | | Hull. | | North Shields | | Leith. | | Devonport. | | Dover. | | Weston-super-Mare. | | Liverpool. | | Greenock. | | Queenstown | | Kingstown | | Londonderry. | | Brest. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| Tu | 1 | 5 17 | 5 40 | 9 56 | 10 21 | 6 51 | 7 18 | 5 47 | 6 15 | 9 7 | 9 31 | 2 31 | 2 56 | 10 12 | 10 33 | 2 25 | 2 49 | 3 15 | 3 39 | 8 30 | 8 54 | 2 21 | 2 47 | 11 30 | — | 7 15 | 7 42 |
| W | 2 | 6 7 | 6 33 | 10 50 | 11 23 | 7 48 | 8 21 | 6 44 | 7 16 | 9 56 | 10 23 | 3 22 | 3 49 | 10 56 | 11 24 | 3 15 | 3 44 | 4 4 | 4 32 | 9 20 | 9 49 | 3 15 | 3 46 | 0 5 | 0 44 | 8 11 | 8 44 |
| Th | 3 | 7 3 | 7 35 | — | 0 1 | 8 58 | 9 39 | 7 52 | 8 32 | 10 53 | 11 28 | 4 18 | 4 49 | 11 58 | — | 4 18 | 4 57 | 5 3 | 5 38 | 10 23 | 11 3 | 4 2 | 5 1 | 1 28 | 2 16 | 9 20 | 9 59 |
| F | 4 | 8 11 | 8 53 | 0 41 | 1 20 | 10 23 | 11 4 | 9 16 | 9 58 | — | 0 8 | 5 24 | 6 2 | 0 37 | 1 18 | 5 40 | 6 26 | 6 18 | 6 59 | 11 44 | — | 5 41 | 6 20 | 3 0 | 3 39 | 10 42 | 11 26 |
| S | 5 | 9 38 | 10 20 | 1 59 | 2 37 | 11 44 | — | 10 37 | 11 13 | 0 50 | 1 32 | 6 41 | 7 20 | 2 1 | 2 42 | 7 10 | 7 49 | 7 40 | 8 19 | 0 26 | 1 6 | 6 58 | 7 34 | 4 14 | 4 45 | — | 0 7 |
| S | 6 | 10 59 | 11 34 | 3 14 | 3 47 | 0 20 | 0 51 | 11 45 | — | 2 12 | 2 47 | 7 57 | 8 28 | 3 20 | 3 55 | 8 22 | 8 50 | 8 54 | 9 25 | 1 43 | 2 16 | 8 7 | 8 37 | 5 10 | 5 33 | 0 42 | 1 12 |
| M | 7 | — | 0 4 | 4 16 | 4 42 | 1 18 | 1 41 | 0 57 | 1 20 | 3 17 | 3 45 | 8 55 | 9 19 | 4 27 | 4 56 | 9 15 | 9 37 | 9 52 | 10 16 | 2 44 | 3 10 | 9 5 | 9 30 | 5 55 | 6 17 | 1 39 | 2 2 |
| Tu | 8 | 0 32 | 0 56 | 5 4 | 5 24 | 2 3 | 2 23 | 0 57 | 1 18 | 4 9 | 4 32 | 9 41 | 10 2 | 5 21 | 5 43 | 9 57 | 10 16 | 10 38 | 10 59 | 3 32 | 3 53 | 9 52 | 10 11 | 6 38 | 6 58 | 2 23 | 2 42 |
| W | 9 | 1 17 | 1 37 | 5 43 | 6 2 | 2 42 | 2 59 | 1 38 | 1 56 | 4 53 | 5 13 | 10 23 | 10 42 | 6 5 | 6 26 | 10 34 | 10 52 | 11 19 | 11 39 | 4 13 | 4 32 | 10 29 | 10 46 | 7 17 | 7 36 | 3 0 | 3 18 |
| Th | 10 | 1 54 | 2 12 | 6 21 | 6 39 | 3 16 | 3 33 | 2 14 | 2 31 | 5 32 | 5 49 | 11 1 | 11 20 | 6 45 | 7 3 | 11 10 | 11 28 | 11 58 | — | 4 50 | 5 8 | 11 2 | 11 17 | 7 54 | 8 10 | 3 36 | 3 53 |
| F | 11 | 2 2 | 2 45 | 6 56 | 7 13 | 3 50 | 4 6 | 2 47 | 3 2 | 6 6 | 6 23 | 11 38 | 11 56 | 7 20 | 7 36 | 11 45 | — | 0 16 | 0 33 | 5 26 | 5 43 | 11 33 | 11 49 | 8 25 | 8 40 | 4 10 | 4 26 |
| S | 12 | 3 0 | 3 16 | 7 30 | 7 46 | 4 22 | 4 38 | 3 17 | 3 33 | 6 39 | 6 53 | — | 0 14 | 7 52 | 8 8 | 0 2 | 0 18 | 0 50 | 1 7 | 6 0 | 6 16 | — | 0 6 | 8 55 | 9 10 | 4 42 | 4 58 |
| S | 13 | 3 31 | 3 49 | 8 2 | 8 17 | 4 54 | 5 10 | 3 49 | 4 5 | 7 7 | 7 21 | 0 32 | 0 49 | 8 23 | 8 38 | 0 54 | 0 50 | 1 24 | 1 40 | 6 32 | 6 48 | 0 23 | 0 40 | 9 24 | 9 39 | 5 14 | 5 29 |
| M | 14 | 4 5 | 4 20 | 8 32 | 8 48 | 5 26 | 5 43 | 4 21 | 4 38 | 7 35 | 7 50 | 1 6 | 1 23 | 8 52 | 9 7 | 1 6 | 1 21 | 1 55 | 2 11 | 7 3 | 7 19 | 0 57 | 1 14 | 9 54 | 10 9 | 5 44 | 6 0 |
| Tu | 15 | 4 35 | 4 52 | 9 5 | 9 23 | 6 0 | 6 18 | 4 55 | 5 13 | 8 5 | 8 21 | 1 40 | 1 58 | 9 23 | 9 38 | 1 36 | 1 53 | 2 27 | 2 43 | 7 36 | 7 53 | 1 31 | 1 48 | 10 26 | 10 45 | 6 17 | 6 35 |
| W | 16 | 5 8 | 5 25 | 9 41 | 10 0 | 6 37 | 6 57 | 5 33 | 5 54 | 8 37 | 8 54 | 2 17 | 2 37 | 9 54 | 10 10 | 2 11 | 2 29 | 3 0 | 3 18 | 8 11 | 8 29 | 2 7 | 2 27 | 11 8 | 11 34 | 6 54 | 7 15 |
| Th | 17 | 5 45 | 6 7 | 10 22 | 10 47 | 7 19 | 7 45 | 6 16 | 6 40 | 9 13 | 9 36 | 2 57 | 3 18 | 10 28 | 10 48 | 2 49 | 3 11 | 3 38 | 4 1 | 8 50 | 9 18 | 2 48 | 3 12 | — | 0 5 | 7 38 | 8 3 |
| F | 18 | 6 30 | 6 56 | 11 17 | 11 52 | 8 15 | 8 49 | 7 9 | 7 42 | 10 2 | 10 30 | 3 41 | 4 8 | 11 13 | 11 45 | 3 36 | 4 7 | 4 26 | 4 54 | 9 39 | 10 10 | 3 39 | 4 11 | 0 39 | 1 18 | 8 32 | 9 6 |
| S | 19 | 7 26 | 7 57 | — | 0 29 | 9 26 | 10 6 | 8 20 | 9 0 | 11 3 | 11 42 | 4 38 | 5 10 | — | 0 21 | 4 44 | 5 24 | 5 26 | 6 2 | 10 47 | 11 24 | 4 48 | 5 26 | 2 2 | 2 44 | 9 43 | 10 22 |
| S | 20 | 8 34 | 9 15 | 1 6 | 1 41 | 10 44 | 11 20 | 9 39 | 10 15 | — | 0 23 | 5 44 | 6 19 | 0 58 | 1 36 | 6 5 | 6 45 | 6 39 | 7 16 | — | 0 2 | 6 2 | 6 36 | 3 21 | 3 53 | 11 2 | 11 41 |
| M | 21 | 9 58 | 10 34 | 2 15 | 2 48 | 11 54 | — | 10 48 | 11 19 | 1 6 | 1 46 | 6 54 | 7 29 | 2 14 | 2 50 | 7 22 | 7 55 | 7 53 | 8 27 | 0 39 | 1 14 | 7 8 | 7 40 | 4 23 | 4 49 | — | 0 15 |
| Tu | 22 | 11 6 | 11 37 | 8 20 | 3 50 | 0 25 | 0 53 | 11 48 | — | 2 23 | 2 55 | 8 1 | 8 29 | 3 25 | 3 58 | 8 25 | 8 51 | 8 58 | 9 26 | 1 47 | 2 17 | 8 10 | 8 38 | 5 12 | 5 33 | 0 46 | 1 13 |
| W | 23 | — | 0 4 | 4 17 | 4 40 | 1 17 | 1 40 | 0 12 | 0 34 | 3 23 | 3 50 | 8 54 | 9 19 | 4 28 | 4 57 | 9 14 | 9 36 | 9 51 | 10 16 | 2 44 | 3 10 | 9 4 | 9 28 | 5 54 | 6 16 | 1 38 | 2 1 |
| Th | 24 | 0 29 | 0 51 | 5 2 | 5 24 | 2 2 | 2 23 | 0 56 | 1 18 | 4 16 | 4 41 | 9 43 | 10 7 | 5 21 | 5 49 | 9 58 | 10 20 | 10 40 | 11 4 | 3 35 | 3 59 | 9 51 | 10 12 | 6 38 | 7 1 | 2 23 | 2 45 |
| F | 25 | 1 13 | 1 37 | 5 47 | 6 10 | 2 44 | 3 5 | 1 40 | 2 2 | 5 5 | 5 28 | 10 31 | 10 55 | 6 14 | 6 34 | 10 42 | 11 4 | 11 28 | 11 52 | 4 23 | 4 46 | 10 33 | 10 54 | 7 24 | 7 47 | 3 7 | 3 29 |
| S | 26 | 1 58 | 2 20 | 6 33 | 6 56 | 3 26 | 3 48 | 2 24 | 2 46 | 5 51 | 6 14 | 11 20 | 11 45 | 7 2 | 7 20 | 11 27 | 11 51 | — | 0 16 | 5 9 | 5 32 | 11 16 | 11 39 | 8 9 | 8 31 | 3 52 | 4 15 |
| S | 27 | 2 43 | 3 7 | 7 19 | 7 42 | 4 11 | 4 35 | 3 8 | 3 30 | 6 37 | 7 0 | — | 0 10 | 7 49 | 8 12 | — | 0 15 | 0 40 | 1 4 | 5 56 | 6 20 | — | 0 8 | 8 52 | 9 13 | 4 38 | 5 1 |
| M | 28 | 3 30 | 3 53 | 8 6 | 8 30 | 4 59 | 5 24 | 3 53 | 4 17 | 7 22 | 7 44 | 0 36 | 1 2 | 8 35 | 8 57 | 0 39 | 1 3 | 1 28 | 1 52 | 6 44 | 7 8 | 0 27 | 0 52 | 9 35 | 9 58 | 5 24 | 5 48 |
| Tu | 29 | 4 17 | 4 41 | 8 54 | 9 19 | 5 49 | 6 14 | 4 42 | 5 8 | 8 7 | 8 30 | 1 28 | 1 54 | 9 19 | 9 41 | 1 27 | 1 51 | 2 16 | 2 40 | 7 32 | 7 56 | 1 17 | 1 43 | 10 22 | 10 48 | 6 18 | 6 38 |
| W | 30 | 5 5 | 5 30 | 9 45 | 10 11 | 6 40 | 7 7 | 5 35 | 6 4 | 8 53 | 9 17 | 2 20 | 2 46 | 10 5 | 10 25 | 2 15 | 2 40 | 3 4 | 3 29 | 8 20 | 8 46 | 2 10 | 2 37 | 11 18 | 11 52 | 7 4 | 7 32 |

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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

**By applying the Tidal Constant of the place, according to its sign (+ *add* − *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.**

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −3 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 13 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 3 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 23 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbellton | −0 23 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 3 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 3 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 55 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 53 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 53 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 3 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 43 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 13 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 13 | Devonport |
| Peterhead | −1 43 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 33 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 3 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 53 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 22 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 22 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 43 | London |
| Youghall | +0 13 | Queenstown |

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# MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 120 | England—East Coast—Spurn Light-vessel | Alteration of fog-signal. |
| 121 | ,, Bristol Channel—Burnham | High light altered. |
| 122 | ,, ,, Penarth Roads—Ranie Spit | Alteration of buoy. |
| 123 | Scotland—East Coast—Peterhead | South harbour light re-exhibited. |
| 124 | Irish Channel—Isle of Man—Port Erin | Breakwater partly destroyed; no light shown. |
| 125 | North Sea—Weser River Approach | Temporary withdrawal of light-vessel in August. |
| 126 | Norway—West Coast—Hellisö Island | Light to be temporarily discontinued. |
| 127 | ,, ,, Stöt Sund | Intended red sector. |
| 128 | ,, ,, Dönnœsö Approach | Sunken rock discovered. |
| 129 | France—North Coast—Canche River—Touquet Point | Lights to be altered to electric. |
| 130 | ,, ,, Somme River | Automatic signal-buoy. |
| 131 | Mediterranean—Spain—Alicante | Mole head lights altered. |
| 132 | ,, ,, Cape San Sebastian | Light irregular in action. |
| 133 | ,, France—Hyères Islands—Levant Island—Titan | Range of light. |
| 134 | ,, Italy—Gulf of Naples—Cavallara Shoal | Provisional bell-buoy. |
| 135 | ,, Adriatic—Gulf of Trieste—Porer Rock | New fog-signal. |
| 136 | ,, ,, Dalmatia—Ombla Inlet | Telegraph cables. |
| 137 | ,, ,, Albania—Gulf of Drin | Intended new lights. |
| 138 | ,, Grecian Archipelago—Morea—Belo Poulo | New light. |
| 139 | Black Sea — Kherson Bay — Ajighiol Light-vessel | Particulars of fog-bell. |
| 140 | ,, Kertch Strait — Tuslinski Light-vessel | Particulars of fog-bell. |
| 141 | ,, Sea of Azov—Berdiansk | Light-vessel withdrawn. |
| 142 | ,, Gulf of Azov—Beglitzkaia | Position of light-vessel. |
| 143 | Red Sea—Bab-el-Mandeb Straits—Perim Island | Temporary lights in Perim harbour. |
| 144 | India—West Coast—Mangalore Harbour | Old mouth of harbour nearly closed. |
| 145 | China Sea—Gaspar Strait—Pulo Mendanao—Ajer Lantjoe | New light. |
| 146 | ,, Tong-King Gulf—Delta of Songka—Song-kink-thai River | New light. |
| 147 | ,, Celebes Sea — Carcaralong Island—Charucca Bank | Position found. |
| 148 | China — Formosa — Takow Harbour — Saracen Head | New light. |
| 149 | Australia—Torres Strait—West Approach—Proudfoot Shoal | Position of light-vessel. |
| 150 | ,, South Coast—Port Phillip—Hobson Bay | Torpedo ground. |
| 151 | South Australia—St. Vincent Gulf—Will Creek | Now buoyed. |
| 152 | West Indies—Jamaica—South Coast—Alligator Reef | New beacon. |
| 153 | ,, Cuba—North Coast | Sunken danger off Bahia Honda not found. |
| 154 | United States—Rhode Island—Block Island | Bell-buoy on S.W. ledge. |
| 155 | ,, Delaware—Cape Henlopen | Bell-buoy on shoal, &c. |

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## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

120.—ENGLAND.—*East Coast.—Spurn Light-vessel.—Alteration in Character of Fog-signal.*—The character of the fog-signal is now altered, so that in thick or foggy weather it will give *three blasts* in quick succession every *two minutes* in the manner following, viz.:—A low note of two seconds' duration, silence two seconds; a low note two seconds, silence two seconds; a high note two seconds, followed by an interval of 110 seconds.

121.—ENGLAND.—*West Coast.—Bristol Channel.—Burnham High Light.*—In accordance with Notice in 1883, the period of occultation of this light is now changed to *two occultations* in quick succession *every minute*, as follows, viz.:—Light, 54 seconds; eclipse, 2 seconds; light, 2 seconds; eclipse, 2 seconds.

122.—ENGLAND.—*West Coast.—Bristol Channel.—Penarth Roads.—Alteration in Character of Ranie Spit Buoy.*—It is intended about the end of March, 1884, to alter the character of the Ranie spit buoy, so that instead of the spherical buoy, there will in future be a *can* buoy, *parti-coloured* in black and white vertical stripes, surmounted with a staff and cage.

123.—SCOTLAND.—*East Coast.— Peterhead. — Re-exhibition of South Harbour Light.*—With reference to Notice in October, 1883, on the discontinuance of South harbour light, and closing of South harbour, Peterhead, the entrance to South harbour is now free from obstruction from deepening operations; and in consequence, the light at the entrance of that harbour would be re-exhibited on 7th February, 1884.

124.—IRISH CHANNEL.—*Isle of Man.—Port Erin.*—(1.) *Temporary Discontinuance of Breakwater Light.*—It having been found impracticable to maintain the light at the extremity of the breakwater at port Erin during all states of weather, the light would be discontinued from 11th January, 1884, until further notice.

(2.) *Partial Destruction of Breakwater.*—A length of about 600 feet of the outer end of the breakwater at port Erin having been partially destroyed by the sea, is covered at high water ordinary

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spring tides. Mariners are cautioned to keep well on the northern side of the bay to avoid the submerged portion of the breakwater.

125.—North Sea.—*Weser River Approach.—Weser Light-vessel. —Intended temporary Withdrawal.*—On 1st August, 1884, Weser light-vessel will be withdrawn from her station in the approach to Weser river for about a fortnight, in order to refit.

126.—Norway.—*West Coast.—Hellisö Island Light.—Intended Temporary Discontinuance.*—This light will be discontinued for necessary repairs, from 1st June to 31st July, 1884.

127.—Norway.—*West Coast.—Stöt Sund Lighthouse.—Intended Sector of Red Light.*—On 15th August, 1884, a sector of *red* light will be shown from Stöt sund (Middle Seiskjer) lighthouse, over Stötkuv and Rörbö with the intermediate shoals, or between the bearings of about S.S.W. ½ W. and W. by S. ¼ S.

*Note.*—By keeping just on or within the southern limit of the red sector, vessels will pass between Rörbö and Fuglesang; the course should then be shaped by the bearing of the principal light, which may at that distance appear as a *fixed* light. *Variation*, 12¾° W.

128.—Norway—*West Coast.— Dönnœsö Approach. — Sunken Rock Southward of Sielva Islet.*—A rock with 7 feet water on it (marked by staff), lies near the fairway of approach to Dönnœsö from the southward, with Sielva islet beacon bearing N.N.E. ¼ E., distant one mile. Position, lat. 65° 42½′ N., long. 12° 19½′ E. *Variation*, 13° W.

129.—France. — *North Coast.—Canche River Entrance.— Touquet Point Lights.—Intended Alteration in character.*—In the course of the year 1884, it is intended to alter the lights on Touquet point, south side of Canche river entrance, to *electric* lights; the works necessary for this alteration will be commenced about 1st April, 1884—the present lights will then be discontinued, and provisional lights exhibited until the electric lights are established; the provisional lights should be visible from a distance of about 11 miles; the *electric* lights will show *white flashes every four seconds*, visible from a distance of about 19 miles; they will be exhibited about 15th July, 1884; further notice will be given.

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130.—FRANCE.—*North Coast.—Somme River Approach.—Automatic Signal Buoy Westward of Cayeux Lighthouse.*—An Automatic signal (whistle) buoy has been placed in the approach to Somme river, with Cayeux lighthouse bearing N. 87° E., distant $4\frac{3}{10}$ths miles. *Variation*, 17° *W.*

131.—MEDITERRANEAN.—*Spain.—Alicante.—Alteration in Mole Head Lights.*—On 12th February, 1884, the following alteration was made in the harbour lights exhibited from the mole heads at Alicante:—The *red* light previously on the East mole is now shown from the West mole; and the *green* light previously on the West mole is now shown from the East mole.

132.—MEDITERRANEAN.—*Spain.—Cape San Sebastian Light.—Reported Irregular Action.*—This light shows a *fixed white* light, with flashes of *five seconds'* duration at intervals of *thirty-three seconds*.

133.—MEDITERRANEAN.—*France.—Hyeres Islands.—Levant Island.—Titan Light—Range of Visibility.*—Titan light, on the east point of Levant island, is visible in clear weather from a distance of 22 miles.

134.—MEDITERRANEAN.—*Italy.—Gulf of Naples.—Cavallara Shoal.—Provisional Bell-Buoy.*—With reference to Notice 98, p. 236, on the temporary discontinuance of the light on Cavallara shoal, west side of Naples bay; and that the beacon, from which the light was exhibited had subsequently been washed away; on 27th January, 1884, a bell-buoy was provisionally placed on Cavallara shoal, in lieu of the beacon destroyed. The buoy, of iron, and surmounted by a frame globe, is painted red; and will be kept in position until the beacon is re-erected.

135.—MEDITERRANEAN.—*Adriatic.—Gulf of Trieste.—Fog-signal at Porer Rock Lighthouse.*—A fog-signal has been established at Porer rock lighthouse, south-westward of cape Promontore. The signal is a steam horn, which, during thick and foggy weather, will give *two blasts* of *five seconds'* duration *every minute*, at alternate intervals of *five* and *forty-five seconds*:—thus, blast of *five seconds'* duration; interval of *five seconds;* blast of *five seconds;* followed by an interval of *forty-five seconds*. In calm weather, this signal should be heard at the distance of 6 miles.

136.—MEDITERRANEAN.—*Adriatic.—Dalmatia.—Telegraph*

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*Cables at Ombla Inlet Entrance.*—Five telegraph cables have been laid at Ombla inlet entrance—from a position 130 yards eastward of Cantafico point, north side of entrance to port Gravosa, thence northward to a position 130 yards eastward of Leandra point. Both these positions are marked by small stone towers, on which is painted in black, an anchor (crown up)—indicating that anchorage is prohibited on, and at least half a cable on either side of, the line joining the towers.

137.—MEDITERRANEAN.—*Adriatic.*—*Albania.*—*Gulf of Drin.*—(1.) *Intended Light on St. Giovanni Point.*—A light will shortly be exhibited on St. Giovanni point, west side of entrance to port St. Giovanni di Medua (Chinkin). It will be a *fixed red* light, visible from a distance of 5 miles. Position approximate, lat. 41° 48½′ N., long. 19° 35½′ E.

(2.) *Intended Light on Cape Rodoni.*—A light will shortly be exhibited on cape Rodoni (Ischin), western point of Rodoni road. It will be a *revolving white* light, visible from a distance of 15 miles. Position approximate, lat. 41° 35′ N., long. 19° 27′ E. Further notice concerning these lights, with date of exhibition, will be given in due course.

138.—MEDITERRANEAN.—*Grecian Archipelago.*—*Morea.*—*East Coast.*—*Light on Belo Poulo.*—With reference to Notice in 1883, on the intended exhibition of a light from a lighthouse erected on the summit of the N.W. point of Belo Poulo (Parapola) islet; on 22nd February, 1884, the light would be exhibited. It is a *flashing white* light, showing a flash *every minute* in the following order—a flash of about *nine seconds'* duration, followed by a faint light for about *fifty-one seconds;* it is obscured through an arc of 23°, or between the bearings of N. 10° E. and N. 13° W.; elevated 367 feet above the sea, and visible from a distance of 26 miles. The lighthouse, 33 feet high, consists of a square tower above the keeper's dwelling. Position, lat. 36° 55′ 35″ N., long. 32° 27′ E. *Variation,* 7° W.

139.—BLACK SEA.—*Khersón Bay.*—*Ajighiol Light-vessel.*—*Particulars of Fog-signal.*—During thick or foggy weather, the bell on board Ajighiol (Adjigiol) light-vessel, Khersón bay, is sounded at intervals of *five minutes.*

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140.—Black Sea.—*Kertch Strait.—Tuslinski Light-vessel.—Particulars of Fog-signal.*—During thick or foggy weather, the bell on board Tuslinski (Touslinski) light-vessel, Kertch strait, is sounded for a period of *one minute* with intervals of *one minute.*

141.—Black Sea.—*Sea of Azov.—Berdiansk.—Temporary Light-vessel Withdrawn.*—The temporary light-vessel (from which two fixed lights were exhibited) near the breakwater at Berdiansk, has been withdrawn.

*Note.*—The lights on the breakwater at Berdiansk—*fixed red* at the S.E. end, *fixed green* at N.W. end, 600 yards apart—are elevated 31 feet above the sea, and should be visible from a distance of 6 miles. There is a depth of about 8 feet at the extremity of the breakwater.

142.—Black Sea.—*Gulf of Azov.—Position of Beglitzkaia Light-vessel.*—Beglitzkaia (Beglitz or Golden Bank) light-vessel is now moored in 17 feet water, on the north side of the fairway, with Beglitzkaia spit bearing N. 4½° W., distant 6 miles. Position, lat. 47° 0′ 50″ N., long. 38° 35′ 25″ E.

*Note.*—Beglitzkaia light-vessel (*Beglitz* in black letters on her sides) is placed at her station on the opening of navigation, and is withdrawn about 1st November; when withdrawn, a red perch with flag marks the position.

143.—Red Sea.—*Báb-el-Mandeb Straits.—Perim Island.—Temporary Lights at Perim Harbour.*—The undermentioned temporary lights have been recently established by the Perim Coal Company, at Perim harbour, south side of Perim island. A *fixed red* light, visible from a distance of about three miles, is shown close to the beacon on Pirie point, west side of the harbour entrance. Also, two *fixed white* lights, visible about three miles, are shown on Murray point; the upper light is placed on the beacon; the lower light bears S. by E. from the upper light, distant about 100 yards; these lights kept in line bearing N. by W. lead in about mid-channel through the harbour entrance. Also, two *fixed white* lights, placed vertically, are shown from the Company's hulk, moored in 27 feet at low water spring tides, with the following bearings:—Murray point beacon, N.E. ¼ E.; Pirie point beacon, S.E. ¾ S.

*Note.*—These lights will be exhibited until further Notice. *Variation*, 4½° *W.*

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144.—INDIA.—*West Coast.—Mangalore Harbour.*—The old or Goorpoor mouth of the Mangalore harbour being *nearly closed up*, vessels making for the inner harbour should use the new mouth at Ullal. The passage to the Bunder between the sand shoals inside the river is very narrow and shoal, and will admit of only very small craft getting up to the anchorage opposite the Custom House. There is an anchorage inside the river near Ullal; but all larger native vessels should anchor outside of the bar.

145.—CHINA SEA.—*Gaspar Strait.—Pulo Mendanao.—Light on Ajer Lantjoe.*—A light is now exhibited from a lighthouse erected on Ajer Lantjoe (West point), Pulo Mendanao or Long island, eastern side of Stolze channel, Gaspar strait. It is a *fixed white* light, elevated 204 feet above high water, and visible from a distance of 21 miles. The lighthouse, 88 feet high, constructed of iron and twelve-sided, is painted white. Position approximate on Admiralty chart, lat. 2° 53′ S., long. 107° 21′ E.

146.—CHINA SEA.—*Tong-King Gulf.—Delta of the Song-Ka.—Light-Vessel at Song-Kinh Thai River Entrance.*—On 21st December, 1883, a light was exhibited from a light-vessel placed on the east side of Kua Kam channel, Song-Kinh-Thai river entrance, approach to Haï-phong. It is a *fixed white* light. The light-vessel (a junk), painted red, is moored with Do-son point bearing S. 19° E., distant $1\frac{1}{10}$th mile. *Variation*, 2° *E.*

147.—CHINA SEA.—*Celebes Sea.—Eastern Part.—Carcaralong Isles.—Position of Charucca Bank.*—Charucca bank, originally reported by the Spanish steam-vessel *Charucca* in 1881, is now reported to be composed of sand extending nearly one cable in an East and West direction, on which the sea breaks heavily; it lies with Anda island bearing S.S.E. ¼ E., distant 10 miles. Between Charucca bank and Anda island, strong surface eddies are reported to exist. Position approximate, lat. 4° 44′ N., long. 125° 32′ E. *Variation*, 1½° *E.*

148.—CHINA.—*Formosa.—West Coast.—Takow Harbour.—Light on Saracen Head.*—On 19th November, 1883, a light was exhibited from a lighthouse erected on Saracen head, southern approach to Takow (Takau) harbour. It is a *fixed white* light, visible seaward between the bearings of N. 36° W. and S. 20½° E.; elevated 164

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feet above the sea, and should be seen from a distance of 10 miles. The lighthouse, 16 feet high, is constructed of brick and painted white. Position approximate, lat. 22° 36′ 15″ N., long. 120° 16′ 00″ E. *Variation*, ¼° *W.*

149.—AUSTRALIA.—*North Coast.—Torres Strait.—Western Approach.—Position of Proudfoot Shoal Light-vessel.*—With reference to Notice 71, p. 163, on placing a light-vessel about one mile S.W. of Proudfoot shoal, western approach to Torres strait; on 1st December, 1883, the light-vessel was placed in 10 fathoms water, $1\frac{3}{10}$ths mile S.W. of Proudfoot shoal. It is an *occulting* light, showing a *white* light for *ten seconds* at intervals of *four seconds*, elevated 40 feet above the sea, and visible from a distance of about 11 miles. Position, lat. 10° 32′ 10″ S., long, 141° 27′ 15″ *E. Variation*, 4½° *E.*

150. — AUSTRALIA.—*South Coast. — Port Phillip. — Torpedo Ground in Hobson Bay.*—Lines of electric cables and experimental submarine mines have been laid in Hobson bay, port Phillip. The space appropriated as torpedo ground lies southward of Williamstown breakwater pier, and is comprised between lines drawn from Gellibrand light-vessel to the outer extremity of that breakwater pier, and from the light-vessel to Gellibrand old lighthouse. Mariners are cautioned not to anchor in the vicinity.

151.—SOUTH AUSTRALIA.—*Will Creek.—Gulf of St. Vincent.*—Will creek, the entrance to which is situated in lat. 34° 15′ 45″ S., and long. 138° 1′ 30″ E. approximate, has recently been marked, on the starboard-hand going in, by 5 tub-shaped buoys painted red, and on the port-hand by 2 cask buoys painted black; the creek is nearly dry at low water; springs rise 8 feet to 10 feet.

152.—WEST INDIES.—*Jamaica.—South Coast.—Beacon on Alligator Reef.*—A beacon has been placed on the N.E. part of Alligator reef, south coast of Jamaica. The beacon, about 20 feet above high water, consists of an iron tripod, surmounted by a cap coloured red and white in horizontal bands; it is situated with the following bearings:—Alligator point, N. by E. ¼ E.; south extreme of Portland, E. by S. ¼ S.; Pedro bluff, W. ¼ N. *Variation*, 3¾° E.

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153.—West Indies.—*Cuba.—North Coast.—Non-existence of sunken danger North-eastward of Bahia Honda.*—With reference to Notice in 1880, on a sunken danger having been reported as situated in approximately lat. 23° 6′ N., long. 83° 4′ W.—or about 10 miles north-eastward of Bahia Honda, north coast of Cuba; the Spanish vessel of war *Bazan* has sounded over, and for about 3 miles around, the assigned position, without finding bottom at 100 fathoms. The danger therefore should be removed from the charts.

154.—United States.—*Rhode Island.—Bell-Buoy off Block Island.*—On or about February 20, 1884, a bell-buoy would be moored on the 5-fathom spot of the S.W. ledge, off Block island, Long island sound, with the following bearings:—Block island lighthouse (S.E.), E.N.E. ¾ E.; Block island lighthouse (North), N.E. ⅜ N.; Montauk point lighthouse, W. ⅜ S.; Beacon hill of Block island, N.E. ⅜ E.

155. — United States. — *Delaware. — Bell-Buoy off Cape Henlopen.*—The shoal off the point of cape Henlopen, Delaware, will be marked as follows:—A bell buoy, painted black, will be moored in 4 fathoms at the elbow of the shoal. Bearings as follows:—Cape Henlopen main lighthouse, S. by W.; Delaware breakwater front lighthouse, W.N.W. ¾ W.; Delaware breakwater rear lighthouse, W. Also, a first-class spar buoy, painted black, will be placed in 4 fathoms on the line of the range of cape Henlopen main and beacon lights, these lights bearing S. ¼ E.; Delaware breakwater front light, W. by N.; and Delaware breakwater rear light, W. ¼ S.; vessels should pass outside, that is, to the northward and eastward of these buoys. Great caution should be observed in approachimg this shoal, as the soundings change very suddenly from 8 to 3 fathoms.

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Charts, Plans, &c., Published by the Hydrographic Department, Admiralty, in January and February, 1884.

| No. | | s. | d. |
|---|---|---|---|
| 979 | Central Pacific ocean:—Islands between 150° and 170° west longitude—Reirson. Palmyra. Christmas. Enderbury. Malden. Vostok. Flint. Caroline. Humphrey. Penrhyn. Starbuck ... | 1 | 6 |

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| No. | | s. | d. |
|---|---|---|---|
| 946 | Borneo, north coast :—Kudat harbour ... ... | 1 | 0 |
| 283 | Newfoundland, west coast :—Codroy road to Cow Head harbour ... ... ... ... ... | 2 | 6 |
| 344 | Spain, east coast :—Port of Tarragona ... ... | 1 | 6 |
| 492 | India, west coast :—Agoada to St. George islands, including Marmugao and Goa roadstead ... ... | 1 | 6 |
| 855 | Sumatra, west coast :—Panjak islands, and adjacent coast of Sumatra. Tapanuli bay and Pulo Mansalar | 1 | 0 |
| 2427 | United States, east coast :—Salem harbour, Marblehead, and Beverly harbours ... ... ... | 1 | 6 |

## Charts that have received important Corrections.

| No. | |
|---|---|
| 769 | South Pacific ocean :—Admiralty and Hermit islands. |
| 1543 | England, east coast :—Yarmouth and Lowestoft roads. |
| 2111 | Borneo, west coast :—Nosong point to Ambong bay. |
| 2056 | Eastern archipelago :—Sunda strait. |
| 1602 | China :—Entrance to the Yang-tse-Kiang. |
| 1114 | South Pacific ocean :—Auckland and Campbell islands. |
| 209 | South Pacific ocean :—Ports and roadsteads in Solomon islands. |
| 732 | Pacific ocean :—Gilbert islands. |
| 731 | Pacific ocean :—Gilbert islands. |
| 766 | South Pacific ocean :—Ellice island, south-eastern group. |
| 980 | North Pacific ocean :—Caroline islands. |
| 2049 | Ireland, south coast :—Brattin head to Wexford. |
| 2691 | South Pacific ocean :—Fiji islands. |
| 1446 | Scotland, east coast :—Aberdeen harbour. |
| 548 | South America, east coast :—Maldonado bay. |
| 941*a*. | Eastern archipelago, western portion. |
| 122 | North sea :—Mouths of the Maas. |

## Hydrographic Notices Issued By the Hydrographic Office, Admiralty, 1884.

No.

1.—Eastern Archipelago. Relating to Macassar strait and other portions of the Eastern archipelago.



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*No.*

2.—AUSTRALIA DIRECTORY, Vol. II. Relating to the east coast of Australia and south-east coast of New Guinea.

3.—SOUTH AMERICA PILOT, Part II. Relating to Magellan strait, the coasts of Chili, Peru, and Ecuador.

4.—COAST OF IRELAND, Part II. Relating to Sligo and Ballynakill harbours.

5.—CHANNEL PILOT, Part II. Relation to portions of the north coast of France, Ushant island, and the Channel islands.

6.—MEDITERRANEAN PILOT, Vol. IV. Relating to islands and ports in the Grecian archipelago.

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BOOKS.

| | s. | d. |
|---|---|---|
| Light lists for 1884 ... ... ... ... ... ... | | |
| RED SEA PILOT. From Suez and from 'Akabah to the straits of Bab-el-Mandeb, and the Arabian coast, thence to 'Aden, also directions for the navigation of the Suez canal. 3rd edition, 1883 ... ... ... ... | 4 | 6 |

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## OUR OFFICIAL LOG.

THE Board of Trade have awarded a binocular glass to Mr. Henri Mulard, master of the French fishing-boat *Hirondelle*, of Calais, in recognition of his services in rescuing a portion of the crew of the ship *Lathom*, of Liverpool, which was wrecked on the Long Sand on the 31st January last. The Board have also awarded a small gratuity in money to the crew of the *Hirondelle*.

THE Board of Trade have awarded a piece of plate to Captain J. Beckeman, of the Swedish steamship *Hugin*, of Gothenburg, in recognition of his humane and praiseworthy services in laying by the schooner *Wave*, of Arbroath, which was in a sinking condition for twenty-three hours in a heavy sea, and finally rescuing the crew and landing them at Gothenburg on the 29th of January last.

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The Board have also awarded sums of money to the second mate and two seamen of the *Hugin* as a reward for their gallant conduct in manning the boat which effected the rescue.

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The ship *Arabia* of Bath, Me., U.S., from San Francisco to Liverpool, with a valuable cargo, met with very severe weather when nearing the Irish Coast. On the 9th February a heavy sea broke the steering gear, disabled two men, and washed the second mate overboard. Temporary steering gear was rigged, which required six men to work it. Thus crippled as to ship and crew, and in the face of continued stormy weather, the captain would have been fully justified in putting in to Queenstown, which he could have done a day or two later. He kept on, however, and ultimately got his vessel to Liverpool on the 14th February. In recognition of the skill and courage thus exhibited, under very trying circumstances, the underwriters on the cargo have presented Captain Macloon with £50.

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The Board of Trade have awarded a binocular glass to Mr. Thomas Fullarton, in acknowledgment of his valuable services in connection with the Life Saving Apparatus at Ayr, and especially for his skilful management of the apparatus, in exceptionally bad weather, on the 23rd January, at the wreck of the schooner *Twin Sisters*, when six lives were saved by means of the apparatus; and also on the 27th January, at the wreck of the *Elizabeth*, when four lives were saved by the same means.

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The Board of Trade have awarded their silver medal to Captain George Bayley, master of the steamship *Bowesfield*, of Stockton, in recognition of his humane and praiseworthy services in rescuing, with great difficulty and risk, the sole survivor of the wreck of the steamship *Hornet*, of Glasgow, which foundered in a hurricane, off Lundy Island, on the 27th January last.

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The Board of Trade have awarded their silver medal to Captain John Killgallan, master of the ship *Eurydice*, of St. John, N.B., in



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recognition of his humane and praiseworthy services in rescuing, with great difficulty and risk, the sole survivor of the wreck of the schooner *Little Racer*, of Padstow, which foundered in a heavy gale, off Lundy Island, on the 10th February last.

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The Board of Trade have awarded a binocular glass to Mr. Jan Van den Hock, master of the Dutch fishing smack *Willem de Zwyger*, in recognition of his humane services in rescuing the crew of the English fishing smack *Joseph and Mary*, of Grimsby, abandoned in the North Sea on the 29th January last.

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### Official Inquiries at Home, 1884.

2080. *Halo*, s.s.; built at Hartlepool, 1879; owned by Mr. George Horsdey and others; tonnage, 923; Sulina to Rotterdam; grain; lost on Punta Sagres Rock, Corrobedo, Spain, January 1, 1884. Inquiry held at Middlesborough, February 13, 1884; before Coleman, Judge; Parish and Wilson, N.A. Master in default for steering a course in too close proximity to a dangerous coast. Certificate suspended for three months.

2081. *Annan*, s.s.; built at Sunderland, 1882; owned by Mr. J. D. Turner and others; tonnage, 661; Dantzic to West Hartlepool; timber; lost near Klokfoten Reef, Sweden, January 10, 1884. Inquiry held at Middlesborough, February 16, 1884; before Coleman, Judge; Parish and Wilson, N.A. Vessel stranded in dense fog. Fog-signals at Nidingen Lighthouse not heard in time.

2085. *Bezaleel*, schooner; built at Salcombe, 1856; owned by Mr. W. Mackay; tonnage, 188; Benin to Schiedam; palm oil; lost on the Goodwin Sands, January 30, 1884. Inquiry held at Westminster, February 19, 1884; before Rothery, Wreck Commissioner; Forster and Anderson, N.A. Master in default for mistaking the South Sand Lightship for the Varne Lightship, and taking no steps to ascertain his true position. Certificate suspended for six months.

2086. *Troubadour*, s.s.; built at North Shields, 1878; owned by Mr. E. Shotton and others; tonnage, 1,028; Odessa to Antwerp; grain and oil cake; supposed to have foundered at sea. Inquiry

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held at Westminster, February 20, 1884; before Rothery, Wreck Commissioner; Knox and Robinson, N.A. Vessel in good and seaworthy condition, and not overladen when leaving Odessa. No evidence adduced as to cause of loss

2087. *Clarence*, s.s., built at North Shields, 1873; owned by Mr. J. Whitfield; tonnage, 123; Garston to Workington; purple ore; lost on Walney Island, January 27, 1884. Inquiry held at Liverpool, February 20, 1884, before Raffles, Judge; Moresby and Hyde, N.A. Loss entirely owing to severe gale. Three men washed overboard.

2088. *I am*, ketch; built at Dartmouth, 1878; owned by Mr. P. Bates; tonnage, 75; lost in Grimsby Roads, December 11, 1884, when loss of life ensued. Inquiry held at Hull, February 22, 1884, before Twiss, Judge; Grant and Vaux, N.A. Loss due, (1) to master leaving vessel at anchor in Grimsby Roads, with two lads in charge, and with only 15 fathoms of chain out; (2) to the heavy gale blowing at the time; (3) to her drifting from anchorage striking on Rope Sands, and immediately heeling over and foundering.

2089. *Lauderdale*, barque; built at Quebec, 1880; owned by Mr. J. R. De Wolf; tonnage, 1,259; Junin to Hamburg; nitrate of soda; abandoned at sea, January 28, 1884. Inquiry held at Liverpool, February 23, 1884, before Raffles, Judge; Curling, Moresby and Hyde, N.A. Abandonment justifiable; vessel having lost rudder in a gale of wind, and sprung a leak, becoming quite unmanageable. Master of *Medea* (vessel which saved crew) commended.

2090. *Madras*, barque, built at Nantes, France. Owned by Mr. T. Lyons; tonnage, 515; Pensacola to Whitehaven; timber; lost in Kirkcudbright Bay, January 22, 1884. Inquiry held at Belfast, February 21, 1884, before Forbes, Judge; Wilson and French, N.A. Master guilty of error of judgment in navigation. Reprimanded.

2091. *Statesman*, brigantine; *Theodore H. Rand*, ship; the former owned by Mr. George Baker; tonnage, 150; the Tyne to Isigny; coals; the latter built at Three Sisters, Parrsboro', 1878; owned by Mr. D. R. Eaton; tonnage, 1,198; New York to London; petroleum; in collision off Beachy Head, when the

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*Statesman* foundered and loss of life ensued. Inquiry held at Westminster, February 22, 1884, before Rothery, Wreck Commissioner; Parfitt, Pickard, and Pattison, N.A. Accident caused by ship porting her helm, and the schooner starboarding hers, thus bringing the vessels together; the *Statesman*, having the wind free, should have kept out of the way of the other vessel, she being close-hauled.

2093. *Eulomene*, ship; built at Liverpool, 1877; owned by Mr. D. Fernie and others; tonnage, 1,624; Calcutta to Liverpool; wheat, jute, &c.; lost on Sarn Badrig Causeway, Cardigan Bay, January 29, 1884. Inquiry held at Liverpool, February 25, 1884, before Raffles, Judge; Curling and Hyde, N.A. Master in error as to his position and should have taken steps, by cast of the lead or otherwise, to ascertain his whereabouts. Certificate not dealt with.

2094. *Imbros*, s.s.; built at Stockton-on-Tees, 1876; owned by Mr. H. Briggs and others; tonnage, 1,275; Alexandria to Hull; cotton seed, wheat, &c.; stranded near Chequer Buoy, Humber mouth, February 2, 1884. Inquiry held at Hull, February 27, 1884, before Twiss, Judge; Ward and Beasley, N.A. Master in default for steering a course too close to buoy on Chequer Shoal. Certificate not dealt with.

2095. *Acaster*, s.s.; built at Sunderland, 1883; owned by Messrs. Bagshawe and others; tonnage, 940; Porman to Newport (Mon.); iron ore; deck swept by shipping heavy sea, when one man was washed overboard and another severely injured, January 23, 1884. Inquiry held at Cardiff, February 26, 1884, before Jones, Judge; Castle, Davies and Kiddle, N.A. Master free from blame. Casualty entirely due to the extremely heavy weather.

2096. *Annie*, brigantine; built at Maitland, N.S., 1875; owned by Mr. G. J. Troop and others; tonnage, 203; Montreal to Buenos Ayres; lumber; abandoned at sea, December 16, 1883. Inquiry held at Liverpool, February 28, 1884, before Raffles, Judge; Curling and Hyde, N.A. Vessel abandoned water-logged, she having filled through having a hole in her port-bow. Court of opinion that had this hole been plugged the ship might have been saved. Master held Canadian certificate.

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2097. *Caledonia*, brigantine; built at Dundee, 1835; owned by Mr. M. Durrant and others; tonnage, 135; Seaham to Lynn; coals; foundered off Flamborough Head, January 18, 1884, when loss of life ensued. Inquiry held at Hull, February 29, 1884, before Twiss, Judge; Knox and Ward, N.A. Foundered in consequence of having encountered exceptionally heavy weather. Master free from blame.

2099. *Deronda*, s.s.; built at Sunderland, 1877; owned by Mr. J. H. Culliford and others; tonnage, 1,090; Dantzic to Boston, U.S.; sugar; materially damaged in gale of wind, when loss of life ensued. Inquiry held at Sunderland, February 29, 1884, before Pecket and Horan, Judges; Forster, Pickard and Anderson, N.A. Casualty caused by hurricane. Master free from blame.

2100. *Lathom*, ship; built at Liverpool, 1883; owned by Mr. T. B. Royden; tonnage, 1,996; Calcutta to London; general cargo; lost on Long Sand, January 30, 1884. Inquiry held at Liverpool, March 1, 1884, before Raffles, Judge; Curling and Hyde, N.A. Loss caused by grave error of judgment on part of master. Certificate not dealt with.

2101. *Staffa*, s.s.; built at Leith, 1865; owned by London and Edinburgh Shipping Company; tonnage, 485; Shields to Cadiz; coal; supposed to have foundered at sea. Inquiry held at Westminster, February 28, 1884, before Rothery, Wreck Commissioner; Powell and Harland, N.A. Overladen when leaving Tyne. No evidence as to cause of loss.

2102. *Janie*, barque; built at Prince Edward's Island, 1872; owned by Mr. W. J. Blyth; tonnage, 254; Bahia to Halifax, N.S.; sugar; lost in the Bay of Fundy, January 13, 1884. Inquiry held at Westminster, February 29, 1884, before Rothery, Wreck Commissioner; Hight and Comyn, N.A. Master in default for negligent navigation in steering a course without making allowance for tide. Certificate not dealt with.

2108. *Emily*, s.s.; built at Sunderland, 1876; owned by Mr. Thomas Kish and others; tonnage, 497; Glasgow to Bordeaux, coals; lost on Briggs Reef, off Groomsport, County Down, February 11, 1884. Inquiry held at Westminster, March 6, 1884, before Rothery, Wreck Commissioner; Castle and Parfitt, N.A. Master

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in default for setting wrong courses, and making no allowance for tide. Certificate suspended for six months. Recommended for one as mate.

2109. *Kelloe*, s.s., and *Remembrance*, snow; the former on a voyage from Tyne to London, with coals; tonnage, 340. The latter built at Middlesborough, 1862; owned by Mr. J. Knott and others; tonnage, 208; Shields to Exeter; coals. In collision off Flamborough Head, February 5, 1884, when loss of life ensued. Inquiry held at Westminster, March 4, 1884, before Rothery, Wreck Commissioner; Parish, Powell and Vaux, N.A. Master of *Remembrance* somewhat to blame for having shown no light over the stern.

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OFFICIAL INQUIRIES ABROAD, 1883-84.

2078. *Tasman*, s.s.; lost on Hippolyte Rocks, November 30, 1883. Inquiry held at Hobart Town, December 5, 1883. Master's certificate held by chief mate, suspended for 12 months. Master cautioned.

2079. *Corio*, s.s.; and *Empress of India*, s.s.; in collision in River Tamar, Tasmania; November 19, 1883. Inquiry held at Launceston, November 26, 1883. Both masters (uncertificated) in default.

2082. *Eagle*, s.s.; accident to machinery, October 8, 1883. Inquiry held at Sydney, November 12, 1883. Master free from blame.

2083. *Albay*, s.s.; stranded off Tower Point, Swatow, December 24, 1883. Inquiry held at Swatow, January 7, 1884. Accident caused by steering gear carrying away. Master's certificate suspended for three months for not anchoring in time.

2084. *Philip Nelson*, barque; stranded in Stanley Harbour, Falkland Islands, November 17, 1883. Inquiry held at Stanley, November 19, 1883. Pilot in default and master to blame. Master to pay costs of inquiry.

2092. *Adjutant*, s.s.; lost on Tigre Point, Quarantine Harbour, Malta, January 14, 1884. Inquiry held at Valetta, February 1, 1884. Master guilty of error of judgment in not giving the Point a wider berth.

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2098. *Calcutta*, barque; lost on a reef in lat. 3° 39″ S., long. 117° 29″ E. Inquiry held at Singapore, January 11, 1884. Master admonished and cautioned to be more careful in future.

2103. *Little Orient* (steam launch). Lost through bursting of boiler. Inquiry held at Adelaide, January 4, 1884. Casualty due to no person being left in charge whilst the fire was alight and the steam partially up.

2104. *Edina*, s.s., and *Excelsior*, s.s. In collision off Gellibrand Point Lightship, December 6, 1883. Master of *Excelsior* in default. Censured.

2105. *Umzimkulu*, s.s. Lost at Port Beaufort, June 16, 1883. Inquiry held at Cape Town, July 11, 1883. Master free from blame.

2106. *Lockett*, barque. Lost at East London, January 4, 1884. Inquiry held at East London, January 8, 1884. Master to blame for grave error of judgment. Certificate suspended for six months.

2107. *Crescent*, s.s.; *Donai*, s.s. In collision at sea, January 31, 1884. Inquiry held at Valetta, February 11, 1884. No decision arrived at.

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## MARINE BOILER CONSTRUCTION, CORROSION, AND PRESERVATION.

By JOHN A. ROWE.

### Boiler Construction.

THE steel now used for boiler manufacture is more ductile than the best iron; its breaking strain varies from 26 to 30 tons per square inch, with an elongation in ten inches of from 20 to 30 per cent. Nevertheless, it sometimes happens that an excess of phosphorus in the metal will render it brittle when cold, or an excess of sulphur will render it brittle when hot. In either case the steel is unreliable. Luckily for the engineer, who must trust his life in the engine-room, these qualities of steel usually effect the destruction of the

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plates during manufacture, the best quality only finding its way to the boiler yard.

Under ordinary circumstances the boilers built for the Mercantile Marine are constructed under the supervision of experienced surveyors of Lloyd's Register; sometimes under the inspection of officers of the Board of Trade. It is also common to see the superintending engineer of the company for whom the boilers are building, watching them during the process of manufacture, and present at the water-test. Boilers are usually tested by water pressure to twice their steam-working pressure, but I strongly recommend all who may read these lines to discourage the practice of raising *steam* to twice the working pressure. Not many days ago, I inspected an iron boiler which had burst under a water pressure of 59 lb. per square inch. It was new, and had been built to work with steam of 30 lb. per square inch. Fancy what a disastrous calamity might have happened, had steam pressure instead of water pressure ripped the shell plate from end to end! And remember that in this case no warning was given; there was no gradual leaking, which, increasing with the pressure, might have led one to suspect what was about to happen. The plate rent through the solid plate close to the landing-edge—not through the seam—and is a living proof of the necessity that exists for efficient supervision. The boiler was not under the survey of either Lloyd's or the Board of Trade, and it is mentioned here as a warning to all who may consider that the time has arrived when careful inspection may be dispensed with.

I have said the plate was a *shell*-plate, and being a shell-plate it was not subject to such forge work as would have proved its quality. The plate was of inferior quality; it was, in my opinion, both low in tensile value, and wanting in fibre, and would have shown its unreliableness had it been subjected to either flanging or a cold-bending test. I am very much afraid that plates of inferior quality occasionally find their way, inadvertently, into boilers, and the experience I have just recorded is a justification of the acts of those in authority who in the past have demanded an ample factor of safety. If the boiler we have been speaking about had successfully withstood an additional pound of water pressure, it would have

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been placed in the vessel and worked under an assumed factor of safety of about 5. Actually the factor would have been but 2.

Boiler-makers who have been most successful as steel boiler manufacturers, admit that experience has taught them that all steel plates which have been in any degree worked, as by thinning and flanging, or have had their rivet-holes punched, should be carefully annealed after such working.

No prudent engineer, with our limited experience of steel, would trust to steel welded-joints, if under tensional stress. Steel furnaces are sometimes welded. The scarphs being V-shaped, and they being in compression are not injuriously affected by the pressure they are subjected to.

After the boiler is completed, or during manufacture, it would be well for the owner's agent, whether boiler-maker, superintending engineer, or other person, to test the steel rivets which are rivetted up, by giving them a heavy blow or two with a hammer. This will test them in two ways. If the steel rivets are exceedingly brittle, their heads may be knocked off; if of good quality, but rivetted into unfair holes, they may be started: in either case a defect is revealed which should not exist, and which it is the duty of the surveyor to discover. Of course the boiler-maker will scarcely approve of the practice, but boilers should be built to stand much severer usage than this. This applies only to the type of boilers where small rivets are used. The heaviest blow on a rivet 1⅛ in. diameter, would produce but little effect.

The different joints at present used in boiler construction, are lapped joints and butt joints. They may be made with one, two, three, or more rows of rivets. The greater the number of rows of rivets and the larger the diameter of the rivet, the greater is the rivet percentage of strength. The strength of the plate section of the joint is determined by the amount of metal left between the rivet-holes; and several rows of rivets are employed, for the purpose of spacing the rivets widely apart: the wide spacing of the rivets giving a large plate strength of joint. It is obvious that if we widely space the rivets, without adding to the number of rows of rivets, we obtain a large plate section, and small rivet section;

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but as, with the view of using the least possible amount of metal, our object is to design a joint as strong through the plate section as in the rivets, we must familiarise our minds with the following rules for ascertaining the percentages of rivetted joints, and then by equating them obtain a formula that will give a joint of maximum strength.

(I) $\frac{P-d}{P} \times 100 = {}^{\circ}/_{o}$ of plate.

(II) $\frac{a \times n \times 100}{P \times t} = {}^{\circ}/_{o}$ of rivets.

Let P = Pitch of rivets.
d = diameter rivets.
t = thickness shell plate.
a = area rivets.
n = number rows of rivets.

To obtain the strongest joint it is evident (I) should equal (II). Let us equate them and find P.

$$\frac{P-d}{P} = \frac{a \times n}{P \times t}$$

$$\therefore P = \frac{a \times n}{t} + d.$$

When the rivets are in double shear

$$P = \left(\frac{a \times n}{t} \times 1\tfrac{3}{4}\right) + d$$

And these will enable us at any time to design a joint of the best proportions.

In order to make this part perfectly understood, I will repeat what is probably well known to most readers, viz.: When computing the value of a boiler to resist internal pressure, the smaller of the two joint percentages is always employed. For instance, if the plate section be 50 per cent., and the rivet section 70 per cent., the strength of the joint would be only 50 per cent. The aim should therefore be to increase the rivet section to 60 per cent., which would have the effect of reducing the plate section to 60 per cent., and thus an economical joint would be obtained.

Owing to the fact that the shearing value of rivets is not so great as their tensile value, the Board of Trade demand that the rivet section shall be $\frac{2}{3}\frac{8}{3}$ times the plate section. Lloyds ask that the rivet section be $\frac{10}{8}\frac{0}{5}$ times the plate section. This is a wise provision. It is better to drill rivet-holes: but whether drilled or punched they should be fair; for if unfair the rivets may not properly fill the hole, and they become almost useless to prevent bursting. They help to keep the shell tight, but permit the joint to be attacked, as it were, in detail, just as the angle at which shears are set enables plates to be easily sheared.

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The value allowed for steel plates and rivets is about 28 tons per square inch, and the formula used to ascertain the working pressure of the boiler is approximately this—

$$\frac{28 \text{ tons} \times 2{,}240 \text{ lbs.} \times \text{strength of joint} \times \text{twice thickness of shell plate}}{\text{Diameter boiler in inches} \times \text{Factor of Safety (say 5)}} = \text{Working pressure in pounds per square inch.}$$

We will now suppose the boiler to be on board; it has been properly designed; its fire-grate area, heating-surface, tube section, and funnel section are proportioned to the work to be done by the engines. The engineer who designed the boiler saw to these points at first: without regard to them the boiler may be an unending trouble during its life. Regard, too, should be had to the cubic capacity of the steam space, but I have long held the opinion that with a properly designed boiler—a boiler whose circulation is perfect, and heating and grate surface ample—the steam space need not be one-half so capacious as it ordinarily is. However, the boiler is on board. Take care to have it choked so as to be able to inspect it all round at any time; and, as you love your fellow-men, see to it that it is stayed externally to the hull, so that it cannot be shifted fore-and-aft under any conceivable circumstance of wind and weather. Many, many noble vessels are lost at sea: steamers well built, well found, and well manned, and we never learn the causes which bring about these disasters. We never get a message from the deep explaining what link first gave way in the chain of causes which ended in the destruction of the vessel and her crew. But having had considerable experience at sea in all parts of the world, in vessels of different sizes, I am disposed to think that more than one steamer has come to grief by the bursting, or breaking, of the main steam pipes; and this might be brought about by either the wrenching or torsional strains upon the vessel in a cross-sea, or the forward movement of the boiler when the vessel plunges heavily. No man that has not had sea experience in the roughest weather should be permitted to express an opinion on this important point. I shall never forget an experience I once had in the Bay of Biscay in a small vessel. As well as we could we steamed from

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Bilbao to England with a gale of wind on the port-bow. I declare that the sensation I experienced one night during the storm, was precisely what I imagine one would have, if a vessel were lifted a few hundred feet in the air and suddenly hurled into the ocean. Every article on board was shaken. No one could maintain himself in a recumbent position in his bunk. Even the most tired could not sleep. To nod for a moment was to lose a grip of the bunk, which meant being thrown sprawling on the deck. And, remember, the sensation was not only that of rapid descent and violent stopping, it seemed as though falling, and stopping, and shaking and twisting were all combined in one to test the sea-worthiness of the vessel and her fittings, and complete the misery of those on board; therefore returning to the subject, do not be coaxed, or coerced, or ridiculed into the belief that the main-boilers of a vessel are just as harmless unstayed externally as when efficiently supported: they are not.

Before dealing with the subject of boiler management I think it would be well to understand what are the constituent elements of the materials which are so largely used in the manufacture and outfit of our Mercantile Marine. The following analysis of iron and steel may be found useful. We may have occasion to refer to their chemical constituents, and a glance at this table will help one to understand what is referred to.

| Constituents. | Steel for Boiler Plates. | Best Wrought Iron. | Common Wrought Iron. | Good Cast Iron. |
|---|---|---|---|---|
| Iron,..... | 99·324 | 99·819 | 99·358 | 95·26 |
| Graphitic or Uncombined Carbon | ·080 | Nil | Trace | ·45 |
| Combined Carbon, | Trace | Trace | ·100 | 2·28 |
| Silicon,..... | Trace | ·069 | ·182 | ·74 |
| Sulphur, ..... | ·085 | Nil | ·010 | ·09 |
| Phosphorus,..... | ·043 | ·112 | ·134 | ·79 |
| Manganese, ..... | ·468 | Nil | ·216 | ·39 |
| | 100·000 | 100·000 | 100·000 | 100·000 |

Graphitic carbon is carbon not chemically combined. Carbon

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tends to produce brittleness. Silicon, ditto. Sulphur tends to render the metal brittle when hot. An excess of sulphur produces "red short."* Phosphorus tends to produce brittleness when the metal is cold. An excess of phosphorus produces "cold short."* Excess of phosphorus has been known to render a plate so brittle as to break like glass when let fall from a vertical position. The addition of manganese seems to render steel ductile; its absence renders it brittle when hot.

Eminent authorities differ in their definition of steel. Fremy's hypothesis is as follows:—

1. Wrought-iron is more or less pure iron; the softest being the best.

2. Cast-iron is iron combined with more or less of carbon, part of which may be replaced by silicon.

3. Steel is a ternary compound of iron, carbon, and nitrogen, or nitro-carburetted iron.

"Caron, on the other hand, while admitting the value of nitrogen in facilitating the conversion of malleable iron into steel, is not disposed to consider it as an essential ingredient on account of the very small amount that can be discovered in steel by analysis."

One word more. Owing to the proneness of some qualities of steel to yield when more or less hot (as in the case of "red short"), it is better to discourage its use in superheaters, where, under certain circumstances, it may become dangerously heated.

## Boiler Management.

When we speak of boiler corrosion we invariably mean the corrosion that proceeds on the water-side of the boiler. On the fire-side there are fewer corrosive agents at work than on the water-side, but such as exist should be known.

The principal ingredients of coal are carbon, hydrogen, oxygen, nitrogen, and sulphur; there being as much as 85 per cent. of carbon.

A beautiful provision of Nature is the interchange incessantly

* A term used in the trade.

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taking place between all animated things. Thus, whilst animal life absorbs oxygen and gives back carbonic acid, the vegetable world inhales carbonic acid and exhales oxygen. On the subject of combustion I cannot do better than quote a few lines from Prof. Rankine. Their presence here may be handy to the student, whose mind is for the moment dwelling solely on the question of Boiler Corrosion, Management, and Protection.

"*Fixed or free* carbon is that substance left in the form of charcoal or coke after the volatile ingredients of the fuel have been distilled away. This ingredient burns either wholly in the solid state, or part in the solid state, and part in the gaseous state; the latter part being first dissolved by previously formed carbonic acid.

"*Hydro-carbons*, such as olefiant gas, pitch, tar, naphtha, etc., must all pass into the gaseous state before being burned."

[The reader should note that mineral oil, recommended for cylinders, comes under the head of hydro-carbons, and there is nothing deleterious in these, so far as cast, wrought-iron, and steel are concerned. It may too be worth stating that the before enumerated hydro-carbons have until recently been allowed during the process of coke-making to pass unmolested into the atmosphere. Now, however, by a simple alteration in the old ovens, and by the employment of a small engine which produces a vacuum of about three pounds below the atmosphere, in pipes connected to the bottom of the ovens, all these valuable ingredients are saved, and the atmosphere made relatively purer. The invention which relates to this process is from the fertile brain of Mr. Jameson, of Newcastle, of the firm Jameson & Schaeffer, Consulting Engineers.—J. A. R.]

"*Hydro-carbons*, if mixed, on their first issuing from amongst the burning carbon, with a large quantity of air, are completely burned with a transparent blue flame, producing carbonic acid and steam. When raised to about red-heat before being mixed with a sufficient quantity of air for perfect combustion, they disengage carbon in fine powder, and pass to the condition, partly of marsh gas, partly of free hydrogen; the higher the temperature the greater being the proportion of carbon disengaged.

"If the disengaged carbon is cooled below the temperature of

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ignition before coming in contact with oxygen, it constitutes while floating in the gas, SMOKE, and when deposited on solid bodies, SOOT. But if the disengaged carbon is maintained at the temperature of ignition, and supplied with oxygen sufficient for its combustion, it burns while floating in the inflammable gas, and forms RED, YELLOW, or WHITE FLAME." Too much attention cannot be given to the subject of combustion. It ought to be known to every engineer that two volumes of oxygen combining with one of carbon will produce more than three times the heat yielded by the union of one volume of oxygen with one of carbon. Imperfect combustion of carbon produces carbonic oxide : perfect combustion, carbonic acid. By judicious arrangements we should endeavour to convert the former gas into the latter ; but the present type of marine furnace scarcely admits of economy in fuel. Perhaps considerable benefit would be derived from the use of a hot air jet behind the furnace bridge. This hot air should be allowed to escape so as to meet the gases as they enter the combustion chamber.

Personally I should be glad to see boilers made with external brick furnaces. The only objection urged against such furnaces is the alleged injury done to the tube ends and tube plate by an intense heat acting on a tube plate more or less dirty on the water side: but all the evidence on this point I have been able to gather proves that if the inner surface of the tube plate be kept free from deposit a brick furnace by its refractory power is more economical than the present type.

Now it will be my object in a later chapter to show how immunity from incrustation may be obtained: meanwhile we are, I think, all agreed in the opinion that furnaces decide the limit to which the steam pressure of boilers can be carried.

Coal having a brassy appearance should receive strict attention on voyage, as this is probably due to the presence of iron pyrites (a compound of sulphur and iron). The iron hull of the ship may also receive injury from the galvanic action set up by the pyrites when affected by salt water.

Returning now to marine boilers, care should be taken to keep salt water away from the combustion chambers, as the com-



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pounds of sulphur, oxygen and hydrogen ofttimes corrode the bottom plates of these chambers, and also the furnace bottom plates behind the bridges.

Avoid leaky tubes. Abandon the methods which cause tube plates to crack.

The fire itself is another foe which severely tests all rivetted joints, and sooner or later brings to light any laminations which exist in plates subject to its fierce influence. Laminations occasionally occur in plates of the very best quality, and are probably due to the absence or insufficiency of flux, which, during the manufacturing process, promotes fusion. Of course the reader will understand that a laminated plate is a plate *not* homogeneous—one whose thickness is made up of many thin layers of iron. The plate may possess great tensile value, and may be ductile, but the interstices between successive layers of iron prevent the transmission of heat from the flame to the water, and overheating and collapsing may possibly ensue.

In this respect, a laminated plate is, when in contact with flame, as dangerous as a plate would be if covered with non-conducting incrustation.

Avoid two thicknesses of plates on heating surfaces. The laps of seams and patches are bad enough to contend with, but two thicknesses of plates sooner or later give rise to buckling. The thinner the furnace plate and combustion box plate (consistent with strength) the better.

When screwed stays in combustion chambers become leaky, or rather when the plate into which they are screwed becomes leaky around the stay-holes, do not fit cup-patches over the stays merely to prevent the salt water running to the bottom of combustion chamber. It is a well-known fact, that cup-patches have been fitted over the heads of defective stays lying close together, and the result has been, that, after a little time, when by galvanic action the threads of the stays have been destroyed, the plate has burst and life has been lost. Remove such stays as early as possible, and have new ones fitted, preferably with nuts. Some engineers object to stay-nuts, but, in a long experience, I have seldom known a nut to burn off. If after, say, two years' use, a

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stay-nut should burn off, it is an easy matter to put a new one in its place, and a flat surface is much better supported by nutted stays, than by stays which are merely screwed into the plate and rivetted over. One is not certain that the thread of the stay-hole was originally good, nor do we know that the stay was well fitted, without we happened to have been present during the boiler's construction: therefore stays screwed into the plate and nutted are obviously to be preferred to stays screwed into the plate and rivetted. If any doubt exist as to the holding power of the nuts, remove them, examine them, and see they are well fitted.

## Circulation.

Most of my readers are aware that the heat of the sun makes but little difference to the temperature of the ocean a few feet below its surface. This is because water is a bad conductor of heat. Heat cannot be transmitted *downward* through its mass. It is important to remember this when considering the question of circulation.

Water is composed of oxygen and hydrogen; two of the latter, by volume, to one of the former. The chemical union of these three atoms produces one molecule of pure water. When heat is applied to water, as in a marine boiler, it is assumed the molecules collide against each other millions of times per second. They collide and rebound, the average distance between them being called "the mean free path." The application of heat increases the average distance between the molecules, and thus fewer occupy a given space. In other words, the density of the liquid is diminished by the influence of heat, and the liquid so heated having less density than that surrounding it, moves upward to the surface.

This method of transferring heat from the hot furnace-crown to the surface of the water is called Convection, and in order to make my views clear to the reader let us assume we are raising steam in a common vertical donkey boiler.

Assume that water-molecules are like small cannon-balls lying upon each other. There must be millions of horizontal strata of such molecules between the furnace-crown and the water-level. Each stratum, as it becomes less dense, rises to the surface, its



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place being taken by the stratum which lay immediately above it. In this way artificial currents of water are produced—some ascending, some descending. At last the upper stratum of molecules reaches the boiling point. But, from experiments I have recently made with model boilers, I am confident that when steam is first manifested in a boiler, bad in circulating properties, the boiling point is reached by only a film of water at the surface. The main body of the water would, if tested, be found below the boiling point; the lower its position in the boiler, the lower its temperature. Such a boiler would prime badly, and promote galvanic action by the plates possessing different temperatures.

This method of raising steam is something like what happens in marine boilers, whose furnaces are so placed in the shell as to permit a considerable body of water to lie below them.

No main boiler I have yet seen is constructed so as to ensure perfect circulation. Boilers in this respect are relatively good and bad. One result of my experiments in circulation is to convince me that provision should be made for the water in a boiler to flow in one direction only. There should be no ascending and descending currents, jostling against each other, arresting the initial speed of the molecules, and ofttimes causing violent priming. The water, every portion of it, should move evenly round like the hands of a clock—*always in one direction.* It must be so to ensure a good boiler, and obtain the highest value for the coal expended. Great good would be experienced in boilers which prime badly if water pipes were fitted externally to the boiler shells, leading from the boiler bottom to about six inches or a foot below the water line. These would, if sufficient in number, effect a radical cure.

In order to heat the water at the bottom of boilers when steam is being raised, several methods are resorted to, the most effective being the admission of steam from the donkey boiler. When steam is up in the main boiler, the donkey steam cock is closed, and the circulation of the water of the main boiler then maintains the heat in the bottom of the shell. Through defective circulation small fortunes are annually wasted. During the process of raising steam in boilers where no apparatus is fitted to warm the boiler bottom, the top of the shell in contact with boiling water and steam expands in

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an axial direction more rapidly than the bottom does, which is in contact with tepid water. The consequence of this is leaky circumferential points and their comcomitant evils.

Menzies' tubes, if properly applied, ought to promote circulation. The principle involved in their use is good. They provide channels for descending currents, and partly accomplish the task of preventing friction between currents of water moving in opposite directions. I am afraid, however, their use is not generally understood. The same remarks apply to the small tubes used in Howard's and other boilers.

In boilers where there is no body of water worth speaking of, lying dormant under the furnaces, and where there is sufficient space between the boxes of tubes, and between the wing boxes and the shell, a rough-and-ready circulation is obtained and this accounts for the indifference which is shown to inventors who are persistent in their efforts to promote circulation, stop priming, &c.

### Scale Formation.

To get the maximum amount of heat from the coal burnt on the grate, it is essential to keep the heating surfaces clean. Iron itself is an excellent conductor of heat, but its conductivity is lessened, and its strength frequently much reduced, by the deposition of a non-conducting substance on the heating surfaces. This is an evil felt in land boilers as well as in marine ones; a cause of danger which has often filled the engineer's mind with apprehension of a coming calamity. What is it that is thus deposited? and Why is it deposited? are questions which we must now proceed to answer.

Sea water has by analysis been shown to hold in solution the following substances:—Chloride of Sodium (or common salt), Chloride of Magnesium (a magnesium salt), Bromide of Magnesium (also a magnesium salt), Sulphate of Lime (or gypsum), Sulphate of Magnesium (or Epsom salts), Carbonate of Lime (or chalk), and organic matter. Those which give most trouble by forming hard non-conducting incrustations are salt, gypsum, and chalk; and the order of their deposition is said to be—1st, Chalk; 2nd, Gypsum; 3rd, Salt.

The two former appear to decrease in solubility from 100° F.

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upward, until at a temperature of about 300° F. they are practically insoluble.

Salt (sea salt) is never deposited in an appreciable extent in modern marine boilers.* It is, in fact, almost impossible to obtain salt deposits. Sea-water contains $\frac{1}{33}$ solid substance. At $\frac{1}{17}$ density, a saturated solution is reached. The water can hold no more matter in solution, and now for every gallon of water boiled off in the form of steam, about 5 ounces of salt are deposited upon the boiler plates.

Occasionally collapsed furnaces have, upon examination, been found perfectly free from incrustation, but the boiler bottom revealed the cause of the damage. A saturated solution had precipitated an abundance of soft salt on the crowns of the furnaces, and they becoming overheated, collapsed through the steam pressure. In one boiler whose furnaces had collapsed through this cause, there was not less than a hundredweight of soft salt and lime removed from the bottom. In the quiet parts of the boiler splendid specimens of salt crystals were found deposited upon a thin layer of carbonate of lime.†

Chalk and gypsum are deposited for the following reasons :—The carbonic acid which holds the chalk in solution is expelled from the water by an increase of temperature, the higher the temperature the more rapidly the deposit taking place. Hence some boilers (principally land ones) show a heavy deposit close to where the feed-water is admitted. Gypsum becomes less soluble with an increasing temperature. As the temperature rises the attraction of the particles of gypsum, *inter se*, gradually becomes greater than the attraction between them and the water, and deposition commences. When the minute particles of solid gypsum separate in the water, they adhere to the iron, and by gradual accretion build up a non-conducting scale. Gypsum is one of the very worst conductors of heat known. Experiments made by Prof. Tyndall prove that solid "crystalline gypsum is an incomparably worse conductor than silica [the substance from which asbestos is made] and it may be safely inferred that in the powdered

* Fed by water from surface condensers.

† The boiler in question was supplied by water from a jet-condenser.

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its imperviousness far transcends that of sand. A jacket of gypsum powder round a steam boiler would materially lessen loss of heat." It has generally been supposed that rapid circulation will by its dynamical force prevent deposit taking place, and probably this is true of some of the ingredients abounding in salt water. But as regards lime deposits I am inclined to think that an affinity exists between them and the heated iron, in character resembling the affinity existing between electrodes and the constituents of the electrolyte. If this hypothesis be true it will follow that deposit will take place as readily on vertical surfaces as upon horizontal ones.

To prevent incrustation numberless compounds have been invented; but the majority of them have passed into oblivion, and they that survive seem doomed. The best compounds may be really useful to prevent the formation of hard deposit, and their influence may do good in softening the scale and facilitating its removal. The objection, however, to the very best is that their acids tend to injure the boiler, and, when I was afloat, it was a standing practice not to distil water from the boiler that had been charged with boiler compositions. The best means to prevent incrustation will be referred to later on, but at this moment I wish to point out one serious trouble arising from scale. Deposits take place not only upon flat horizontal surfaces, but upon even vertical surfaces, such as tube plates—the back ones more especially. These deposits, if not removed in time, assume such a thickness as to prevent the heat passing from the flame to the water, and in consequence the back tube plate becomes unduly heated. At this juncture the fire doors are perhaps opened to reduce the steam pressure, the cold air attacks the unduly-heated tube plate, which, by its inability to rapidly transmit heat, contracts by cooling, and cracks between the tube-holes. This one sees again and again in boilers that are ill cared for—in vessels where everything is hurry and bustle, and no time allowed for cleaning purposes. It is, however, a penny-wise and pound-foolish proceeding, and none understand this better than engineers, who must perforce obey orders, given by superiors who are unable to judge what is detrimental and what is beneficial to their best interests. The water falls from the cracks to the bottom of the

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combustion chamber, where, in contact with the sulphur from the coal, it attacks and injures the iron. Always carefully sound plates close to landing edges, *where water is able to lodge.*

If it were possible to cover the whole internal surface of the boiler with a thin (a paper-like) scale of gypsum (plaster of Paris), perhaps this would be an effectual means of preserving the iron from corrosion, and most engineers like to see, and endeavour to obtain, a thin scale over the boilers, and this ought not, in my opinion, to be such an insuperable task as many engineers in vessels fitted with surface condensers declare it to be. As before said, mere elevation of temperature precipitates much of the chalk and gypsum held in suspension in the water. If, therefore, the water be changed frequently at starting the boilers will become recipients of these substances—the more water passed into the boiler the thicker the scale becoming. Instead of retaining the water supplied to the boiler at starting, and working for perhaps three weeks until a density of $\frac{2}{3}^{2}_{3}$ is reached, it would be better to blow down occasionally to the bottom of the glass, and pump the water up again to the working height. In this way scale would be obtained in a comparatively brief period. Do not pump the water to the top of the glass and immediately blow down, but blow down first, and pump up after; or else pump up first and then scum to the working height. Much injury is done to the boiler, especially to the tubes, by the careless and rough use of chipping or scaling hammers. A good means of discovering a wasted tube is by sounding. A thick, reliable tube will yield a clear ringing note: a thin one, a hollow note.

Sometimes brass tubes become so thin as to be dangerous. I have known them to collapse through the greater portion of their length—collapsing even at the ends which project into the tube-plates. This is dangerous, for the reason that an immense body of water can rush through the spaces left between the circular tube-hole and the deformed tube. An excellent plan to prevent this whole-length collapse is to fit ferrules into the tube-ends. They stiffen the ends, and thoroughly prevent collapse near the tube-plate.

(*To be continued.*)

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. V.

MAY, 1884.

## MR. CHAMBERLAIN AND THE SHIPOWNERS.

THE attitude assumed by certain associations and persons amongst the shipowners has placed them in a false position as a body before the country. This is a matter much to be regretted. Mr. Chamberlain, in submitting his measure to Parliament, has more than once, indeed many times, explained that he in no way pledges himself to the details and methods proposed in the draft he had prepared. He has further stated that to some parts of it, viz., those relating to pilotage and tonnage, he attaches no particular importance as part of a measure for saving life at sea. He further stated that so long as the principles of his Bill were maintained (1) that insurance should be full indemnity and nothing more in any case, and nothing less where the owner desired to insure his risks to the full; (2) that the Employers' Liability Act should in a modified form be applied to owners and crews of ships; and (3) that it shall be incumbent on the owners to make and to keep their ships seaworthy; he was prepared to make great concessions in other parts of the Bill: and Mr. Chamberlain has gone out of his way in the first place to submit his proposals to the criticisms of the shipowners as a body, and to invite them over and over again to assist him in framing a



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measure based on those lines, which shall as far as possible meet the views of the trade. We do not see how it is possible for any Minister of the Crown to have acted with greater fairness and generosity to a body of employers of labour. Yet, how has the right honourable gentleman been met by that body? We are sorry to have to place on record the fact that he has been met in a manner as unexpected as it has been unreasonable. The shipowners as a body have placed themselves in a ridiculously false and hopeless position by meeting Mr. Chamberlain with the unqualified demand that he shall in the first instance make his appearance in Parliament and withdraw his Bill absolutely. When he has done that, they may probably not decline to confer with him. They have taken up the position that the right hon. gentleman is to submit to their dictation, and not to legislate at all unless according to their will. If there were any reason in their ultimatum, wrong as it is from a tactical point of view it might receive consideration; but there is no reason in it. Mr. Chamberlain's proposals have been before the shipowners for a long time, and they as a body have done nothing to help him, indeed not only have they done nothing as a body, but they and their organs have endeavoured to thwart and to overbear those individual shipowners of high and independent position and standing who have ventured to confer with the president of the Board of Trade.

Suppose that Mr. Chamberlain were what he is not, a man without a purpose and without tenacity and determination, and supposing by way of mere conjecture—we say by way of mere conjecture because the proposal is too transparent and too absurd to be entertained seriously—that he had consented to withdraw his Bill, he would have been in no better position, the shipowners would have been in no better position, and the country would have been in a worse position than before. For on the withdrawal of the Bill the shipowners might have exultantly said it was a sign of weakness and a clear indication that after all no legislation was needed, and if a new Bill were to be framed and introduced under such circumstances their representatives might plead the withdrawal of the former Bill as evidence

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that the new one should be withdrawn too. Assuming, however, that they did not take that line, the substituted Bill would be subjected to the same sort of reception and criticism as the withdrawn Bill, and the subject would not only be no further advanced, but would probably be indefinitely delayed. But, beyond all this, the shipowners, as a body, have acted as if they desired to inflict in a harsh and peremptory manner, an indignity on the right hon. gentleman at the head of the Board of Trade, an indignity that no Minister of the Crown and no great department of the State could for a moment endure, and they appeared to seek to inflict this indignity not because it was necessary, but on account of the outspokenness of the right hon. gentleman during an early part of the controversy, when he referred, in no measured terms, to the great and increasing loss of life at sea. That it is absolutely unnecessary to withdraw a Bill in order to amend its provisions, the shipowners as a body, as well as the merest tyro in legislative matters, know full well. Yet they insist. Mr. Chamberlain absolutely declines to withdraw his Bill. He with equal decision and firmness declines to refer it to a Select Committee. There is no vacillation with Mr. Chamberlain. His Bill may possibly not get through, owing, amongst other things, to the immense amount of time now wasted in Parliament, and to the other important measures that have to be carried. This is only a possibility, and even if it should come about, Mr. Chamberlain's position remains unassailable; but the probabilities are that the Ministry, regarding the measure of great public importance, may press it through to a successful termination. Be the fate of the Bill what it may, the subject of Mercantile Marine Legislation cannot be left alone. The parties in the House of Commons representing the interests of labour and the large constituencies of working men, cannot rest until the measure of safety afforded to workmen ashore is extended to their fellow-workmen at sea, nor can the country rest until the law is so altered, that the loss of a ship and her crew can no longer afford a source of income to those who have invested money in her. All persons in the land, save the shipowners as a body, see this and have seen it for long. There are in this country



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certain shipowners of high renown, who hold aloof from it, who see that these things must come, and who find that in the present Bill there is nothing to affect them prejudicially; they do not swell the chorus which demands the humiliation of a minister who has put his shoulder to the wheel with a view to lessen loss of life at sea. There are still others of this high class, to their honor we record it, who, notwithstanding the dictation of their body, are meeting Mr. Chamberlain in conference, and are arranging, or endeavouring to arrange, clauses, which while maintaining Mr. Chamberlain's principles, shall do so in a way least likely to interfere with trade, and we can now only express a hope that their labours will be crowned with success. At the time these pages are written, we do not know the conclusions arrived at, but in our next issue we propose to make a few more observations on the subject.

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## SHIPS' NAMES AND MARKS.

SOME twenty years ago, a Mr. Norfolk Howard, who had previously rejoiced in the name of Joshua Bugg, made himself famous, and at the same time conferred a benefit upon a number of his fellow-countrymen by proving that an Englishman may legally change his name at will. It is not quite so easy to change the name of a British ship as that of a British subject. Previously to 1871 no change of name was allowed by the law, but it was then easy to evade the restriction. Every British ship, when once registered, was compelled to keep the same name while she remained on the register, but all that was necessary to get rid of a distasteful name was to have a fictitious sale to a foreigner, and the vessel having once ceased to be a British ship might on the next day be re-purchased and registered under any name her owner chose. The law as it now stands allows a vessel's name to be changed by permission of the Board of Trade, but if a vessel has been sold to foreigners and re-purchased by British subjects, she must on re-registry take her

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former British name. Foreign ships registered in a British port for the first time are required to take their foreign name. The Board of Trade require as a condition of change of name that some valid reason be assigned for the change, and that notice of the retention be given for a prescribed number of issues in three or more newspapers, one of which must be the *London Gazette*, and another a paper circulating largely in the neighbourhood of the port where the vessel is registered. In addition to this the vessel has to be surveyed and pronounced seaworthy by a Board of Trade Surveyor. In cases where the ship may have a passenger certificate, and is consequently subject to periodical surveys by the special surveyor, change of name is dispensed with. When a survey has to take place necessitating the placing of the vessel in dry dock, the total expense attendant on the change of name is considerable, the fees for surveys and the expense of advertising will, even for a comparatively small vessel, come to twenty or thirty pounds. Some restriction is doubtless necessary, or a previous bad character might be covered by a change of name. This latter evil is however further provided against by the old names being still inserted in the Mercantile Navy List in foot-notes. A ship must, by the Act of 1871, always be known and marked by her *bonâ fide* name. An instance occurred previously to the passing of that Act, of some steamers which were built to ply on the Clyde. These vessels had names with local associations given to them, but being afterwards employed upon the Thames, it became desirable to alter their names, and it not being practicable to do so, their owners, while the vessels retained their legal registered names, advertised them by, and marked them with, other names suitable to the altered circumstances. Such a course would be altogether illegal under the present law.

On looking over a few pages of the Mercantile Navy List, it is easily seen that while large vessels, and especially the vessels belonging to large companies, have names given them of a distinctive character, smaller vessels get their names from fancy or sentiment, and not at all with a view to distinctiveness. The name borne by the largest number of vessels is, as might be supposed, *Mary*. There are over two hundred sailing vessels and

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five steamers named *Mary*, over one hundred *Mary Anns*, and about seven hundred vessels in which *Mary* is the first word of the name. The names which occur most often next to the *Marys* are the *Elizabeths*, *Janes*, and *Sarahs*, and after them comes the *Williams*, which alone of male names exceeds one hundred. A very large number of the names in the List are Christian names; and, perhaps, next to them is a class of names in which the word Brothers occurs, indicating, doubtless, a partnership in the vessels. There are eighty-nine Brothers (of which twenty-six hail from one port, St. John, Newfoundland), forty-two *Two Brothers*, thirty-six *Three Brothers*, twenty *Four Brothers*, seven *Five Brothers* and *Six Brothers*, eight *Seven Brothers*, two *Nine Brothers* and *Ten Brothers*. A glance at the Mercantile Navy List suggests a thought of the diversified character of our fellow subjects who own ships and who are of almost every race, creed, and colour. A considerable number of vessels are registered at Singapore, and have names obviously of Chinese extraction, and besides this, vessels are registered under the English flag at such Chinese treaty ports as Shanghai. Then there are Singhalese ships rejoicing in such names as *Sevasimtharapurary*, and coming to Malta we get a *San Michel Arcangelo*, and at Quebec a *Notre Dame Bonsecours*. Strange to say there are as many *St. Patricks* registered in Newfoundland as in Ireland. One British subject, resident in Heligoland, appears to have had such a supreme admiration for *Peter Friedrich Ludwig, Duke of Oldenburg*, as to name four vessels after him, having for distinction (*green*), (*white*), (*red*), and (*various colours*) respectively added in parenthesis. These vessels, however, are not now in the List.

Not only do popular statesmen, members of the Royal family, and distinguished generals furnish names for ships, but in the Mercantile Marine List one may see celebrated the last victory, the winner of the Derby, and the sensation of the hour. Ten *Gladstones* attest the popularity of the present Premier; five *Beaconsfields*, two *Earl Beaconsfields*, three *Earls of Beaconsfield*, and three *Lord Beaconsfields* commemorate the last. Among the additions of last year were a *Lord Wolseley*, an *Alcester* and a *Tel-el-Kebir*. The great trial of twelve years ago, has traces left

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in a *Dr. Kenealy* and a *Sir Roger Tichborne;* the Ashantee war was commemorated by a *Coomassie*, a *Black Watch*, an *Ashantee*, and more than one *King Koffee;* the Zulu war by two *Cetewayos* and a *Rorke's Drift*, and a number of *Zulus*.

There are a few efforts at the humorous shown in the names of British merchant vessels. One shipmaster, on being hailed and asked the name of his vessel, will reply, *What's that to you*, and another will say, *Never can tell*. There are nine vessels which persistently ask the question—*Why not?* and one whose legal name is *Who'd a thought it?* and another puts it, *Who'd have thought it?* There are two named after the *Girl I love*, and one after the *Girl of the Period*. *Go ask her* is the legend borne by one, and *Let me alone* by another. *I'll try* is the motto of two vessels, *Never despair* of one, and *Fear not* of six. One ship is branded as a *Tell tale*, and two are called *Cock of the Walk*. One is distinguished by *Savoir Faire*, six are always on the *Qui vive*, five persistently *Look out*, and six are constantly *Wide awake*.

The law allows the owner of a merchant ship to choose her name, and under some restrictions, to alter it for any he may choose, but when once given it is carefully provided that the name shall be properly and permanently marked. The name must be on each bow, and the name and port of registry on the stern in letters not less than four inches long, light on a dark ground, or dark on a light ground. The Board of Trade Surveyors are instructed not to sanction marking on boards which may easily be detached, but only on permanent parts of the structure of the ship. Some classes of vessels are exempted from these provisions: fishing vessels registered under the Sea Fisheries Acts, vessels employed solely in inland navigation which do not need to have more than the name and port on the stern, and yachts which, if they belong to recognised clubs, are exempt from marking altogether.

Besides her name, every merchant vessel has another distinguishing characteristic—the official number. This cannot be changed while the ship exists; if she be sold to a foreigner and then again become British property the old number is given to her, and such is also

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the case if she be wrecked and abandoned and then afterwards repaired and re-registered. The first process in the registry of a ship is her measurement for tonnage. When this is complete her owner is required to have the name marked as we have described, also a scale of feet on each side of the stem and stern post to indicate the draught,* and lines on each side of the ship amidships indicating the height of each deck above water. The deck lines are required to be not less than twelve inches long and one inch wide, and the upper edge is to be *level* with the deck plank (or plate) next the waterway. The disc which is put on before the articles are signed should be twelve inches in diameter with a horizontal line eighteen inches long drawn through its centre. The distance from the centre of the disc to the upper edge of the deck line is the minimum freeboard of the ship by agreement with the crew. Fishing vessels, yachts and coasters under 80 tons register are exempt from the marking of deck and load-lines. On it being certified to the Registrar of Shipping that the name, port, scale of feet, and deck lines are correctly marked, an official number is appropriated, which, with the register tonnage, is carved on the main beam of the ship. A somewhat singular question once arose as to the official number of a ship. The vessel was cut in two pieces, one of them was launched away from the other, and then to the head a new stern was built, and to the old stern a new head was attached, thus making two ships out of one. The official number was, after some consideration, retained for that part in which was the beam, bearing the number and tonnage of the ship, the other part was considered to be a new vessel.

The penalty for neglect or inaccurate marking of the deck-lines and disc is one not exceeding £100, and for this the master and owner are each liable. Any other person altering or removing either deck-lines is liable to a similar penalty. Instances are not uncommon where shipmasters have had this personal liability enforced, and have been fined for not having deck-lines marked or for the freeboard as shown by the disc not agreeing with that

* Barges and other vessels employed solely in inland navigation are exempt from this requirement.

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stated in the engagement with the crew. There is no penalty for neglect of the other markings required except that the absence or inefficiency of them is sufficient to determine that the vessel is unduly registered and thus is liable to detention at any British port by the Customs.

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## THE INSTITUTION OF NAVAL ARCHITECTS.

THE 25th Session of the Institution of Naval Architects was held on the three days, commencing April 2nd, and the proceedings were of quite average interest. One marked feature was the large amount of time assigned to the consideration of subjects affecting the Mercantile Marine, only one paper being specially devoted to war-ships. From the report of the Council it appears that the Institution is in a flourishing condition. It has however during the past year lost two of its most valued members, Mr. C. W. Merrifield, F.R.S., and Sir William Siemens, F.R.S. The former was for some years the Honorary Secretary, and the latter, by his improvements in the manufacture of steel, contributed to the progress of ship-building and marine engineering.

The President, Earl Ravensworth, in his opening address, alluded to the depressed state of the Shipping Trade, aggravated by the unprecedently large output of new ships during 1883. He also adverted to the organisation during the past year of the corps of naval construction, including the present constructors of the Royal Navy, both at the Admiralty and the various dockyards, and providing for the training of the Naval Architects of the future. He then advocated the building of more ships of war, and recommended that private yards should be used for this purpose to a larger extent than they had been in the past, the result of the present system being that ships were much too long in hand. He also strongly condemned Mr. Chamberlain's proposals for legislation regarding the Mercantile Marine, and said that they had contributed to the present depression in the

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shipping trade. The President's address was eloquent and in many respects most able, and the Institution is greatly benefited by his unremitting and exemplary performance of the duty of chairman at the meetings, but in connection with his criticisms of the Admiralty and the Board of Trade it must be remembered that he is a Conservative peer, and that in his annual address he does not speak for the Institution or its Council, but only for himself.

The first paper, by Mr. J. D'A. Samuda, was entitled,

THE "RIACHUELO" BRAZILIAN ARMOUR-CLAD TURRET-SHIP; ITS CONSTRUCTION AND PERFORMANCES.

The *Riachuelo* is a steel armour-clad twin screw steamer of 6,000 tons displacement and 6,000 indicated horse-power, having steel-faced armour consisting of a belt 250 feet long (the vessel's length being 305) 11 inches thick amidships, reduced at its ends to 10 inches, and under water to 10 and 7 inches. Beyond the ends of the belt armour is placed internally of 8 inches thick and at an inclination of 15°, this being equal if struck horizontally to a thickness of 10 inches. A horizontal deck of 2-inch steel armour running through the ship joins the inclined armour at each end, and on this are worked two oval breastworks, built up of plates and angles, and covered with 10-inch armour, each encircling a turret carrying two 20-ton guns. The breastworks are carried so far out as to enable the guns in each turret to command an unbroken fire for 180° on its own side of the vessel, and 50° on the opposite side. Thus the whole four guns can be brought to bear ahead or astern and on each broadside, while all-round fire can be always maintained by two of them. Besides the 20-ton guns the vessel carries six 70-pounders, fifteen machine guns and torpedo guns. The hull is sheathed with yellow metal upon two thicknesses of wood, and the stem, sternpost, rudder, &c., are of gun metal. The vessel has three masts, is square-rigged, is divided into fifty-eight water-tight compartments, and to save weight steel and gunmetal have been largely used in the construction of her machinery. The vessel has attained a speed of 16¼ to 16¾ knots and carries sufficient coal to enable her to steam twelve days at a

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speed of 15 knots per hour. Her coal consumption is only 1·38 lbs. per indicated horse per hour. Her speed is stated to be the highest ever attained at a measured mile trial by an ironclad, and her coal endurance also exceeds that of any ironclad afloat.

The next paper was one by Mr. A. F. Yarrow, entitled:

DESCRIPTION OF THE ELECTRICAL LAUNCH BUILT LAST YEAR.

The launch, which was the subject of the paper, was built jointly by Messrs. Yarrow, the Electric Storage Company and Messrs. Siemens, and after a number of trials on the Thames, it was sent to the Vienna Electrical Exhibition. It was propelled by means of an electric current obtained from storage cells, or accumulators, each cell measuring 9½ inches long, 9 inches wide, and 7½ inches deep, and being made of glass, porcelain, or any material which cannot be damaged by acid. Into each cell are placed eighteen pairs of plates, the positive plate of each pair being pasted with red lead, and the negative plate with litharge. The plates are immersed in dilute sulphuric acid. The cells are charged by a machine capable of generating electricity, usually termed a dynamo, and driven by a steam-engine, or otherwise. The ends of wires from the dynamo are connected to the accumulators and a current passed through till each accumulator is fully charged. It is then ready for use at any moment, that is to say, whenever the ends of the accumulator are connected by means of a wire or any conductor of electricity, a current is given off, which is capable of driving an electro motor. The effect of charging the cells is to cause chemical action, the positive plates combine with oxygen, and the negative plates take up hydrogen. On giving off electricity the reverse action results—the positive plates give up oxygen, and the negative plates give off hydrogen, leaving everything in the exact state it was prior to the charging process, the chemical change in the one case being the result of the power expanded, and in the other the power generated being the result of the chemical change. There are losses of power in all the steps of the process, in converting the mechanical energy into electricity, in charging the cells and in re-converting the electricity into mechanical energy to propel the boat. The total loss is from 50 to 55 per cent.

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The dimensions of the launch were, length, 40 ft., and beam, 6 ft. The weight of hull 2 tons, of the storage cells 2 tons ½ cwt., and of the motor, stern tube, shafting and propeller, 10 cwt. Sixty-five storage cells were placed below the floor of the launch and sixteen under the side seats. The motor, which was worked up to 7-horse power was placed near the stern and coupled up direct on to the screw shaft. By connecting only a part of the cells at first and gradually coupling up others as those were partially exhausted, the boat could be kept running for five to six hours, but if the best result was desired for a short time only, all the cells were connected at first, and full power used. The steersman, by means of a switch-handle, is able to put in or out of circuit any number of cells at will. The greatest speed obtained at Long Reach with six persons on board and seventy-one cells in circuit, was 6·9 knots. A steam-launch of about the same size with engine, boiler, water in boiler, and coals sufficient for a six hours' run, the total weight being equal to that of the electric launch, would have had an advantage in point of speed of 1½ to 2 knots. If, however, the steam-launch were used in salt water, necessitating the carriage of a supply of fresh water for the boilers, much of the advantage would disappear.

From actual practice it was found that the boat could be entirely managed by one man. The charging process for a six hours' run took about seven and a-half hours. The loss of electricity per day while the accumulators stand ready charged is variously estimated at 2 to 10 per cent. Mr. Yarrow concludes by summing up the advantages and disadvantages of electric propulsion in its present condition as compared with steam.

1. Entire absence of steam.
2. Great cleanliness.
3. The whole of the boat is available for passenger accommodation, the midship or best part of it not being occupied by machinery.
4. When once charged it is ready for use at a moment's notice.

The points against it are :—

1. Difficulty and delay in frequent charging.
2. Greater first cost.

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3. Greater cost of working in those cases where an engine has specially to be laid down for the purpose of charging.

The cost of the accumulators may of course be much reduced, and the boat may be used with advantage where a natural source of power such as a waterfall exists. It is reasonable to suppose that electrical boats may be found useful for various purposes, such as pleasure yachts, and fitted up as torpedo boats for night attack, being perfectly noiseless, and without funnel or fire to betray their existence they would seem to be eminently suitable.

The third paper by Mr. Otto Schlick was:

### On the Vibration of Steam-Vessels.

Mr. Schlick begins by calling attention to the fact that since all steamers shake more or less when the engines are in motion, the phenomenon has had little attention paid to it, and when a ship with comparatively powerful engines shows an unusually strong vibration, it is either looked upon as quite natural or it is put down that the ship is of too weak construction. It is, however, the case sometimes, that weakly constructed ships with powerful engines shake but little, while some strongly built ships are subjected to extremely violent vibration. Mr. Schlick, after investigating at some length the effect of the movement of the engines upon various parts of the structure, concludes that great vibration is often caused by some relation between the natural period of vibration of the whole ship, and the time of revolution of the engines. It is not necessary that these periods should be the same, but if one be a multiple of the other, or if they be connected by an easy ratio when the coincidence takes place, the strength of the vibration is considerably increased. Is this conclusion borne out by actual observation? When a steamer is first set in motion the shaking is but slight, but as the revolutions of the engines gradually grow quicker, one notices in many cases that suddenly as if with a shock, clearly perceptible shakings or vibrations are set up which extend themselves over the entire length of the ship, those at the extremities being most perceptible, and sometimes producing a disagreeable effect. This fact points to the conclusion that the shaking suddenly arises on the attainment of a certain number of revolutions by the

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engines, owing to the correspondence of period with the vibration of the ship. Usually the natural period of the ship's vibration is less than that of the engines, but a case of a contrary character came under Mr. Schlick's observation. The vessel was a passenger steamer, 160 feet long, of fine lines, strongly built and full powered engines. When the engine attained the full number of vibrations (89 per minute), the vibrations which suddenly manifested themselves were so violent that the public reluctantly made use of the vessel. A smaller propeller was tried, making some 5 to 6 more revolutions per minute. The result of the change was favourable; but it was observed that before the engine had reached its full number of revolutions the same violent shaking was observed for a time, but ceased with the attainment of the full number. It is thus the case that violent shaking may be remedied by a change of propeller, not because the new propeller is better than the old, but because the number of revolutions of the engine being altered, the relation of periodicity is altered also. Stowage of cargo affects the period of the ship's vibration, the period being increased when greater weight is at the middle and extreme ends, and decreased when it is concentrated at the nodal points of the vibration, which are between the middle and ends. Great vibration is, in some cases, due to the centre of gravity of the propeller being not in the middle line, and this may be cured by altering its position with regard to the cranks of the engine, by uncoupling the screw shafting, and reconnecting it after turning through an angle. If the holes for the coupling bolts be exactly pitched, this can be done. After dealing with some cases of local vibration, such as in the flat bottoms of river steamers, in the stern frame, &c., Mr. Schlick goes on to remark that, although the strains produced by vibrations are not so great as those brought about in other ways, they yet are of great importance. At sea the strain of vibration may be superimposed upon that due to the variations in support caused by the forms of waves. The continual alternations of strain due to vibration loosen the rivetting sooner than a greater but more constant strain would do. In conclusion, the author gives a description of an instrument used by him in measuring the vibrations of ships.

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The second morning sitting of the Institution was exclusively occupied by papers on stability. The first was by Mr. W. Denny, of Glasgow,

On Cross Curves of Stability, their Uses and a Method of Constructing them, Obviating the Necessity for the Usual Correction for the Difference of the Wedges of Immersion and Emersion.

This paper was, as may be inferred from its title, of a highly technical character, being chiefly occupied by a description of methods employed to facilitate the construction of curves of stability for steamships at various draughts. Hitherto the Naval Architect has usually been content to get out the curve of stability showing the range of safety for the ship for her loaded condition only, while for the launching and other intermediate draughts it has been considered sufficient to obtain the metacentric height. In view, however, of the conclusions arrived at in the course of the *Daphne* enquiry, Mr. Denny has deemed it advisable to enlarge considerably the scope of the stability investigations on new designs and to make such calculations as will enable him to know the exact stability of the ship at any probable draught and for any angle of inclination. The paper describes two very ingenious methods of facilitating the work, due to members of his staff, and other matter as to the use of the Mechanical Integrator of considerable interest to the scientific Naval Architect but quite unintelligible to the ordinary reader. The same remarks apply to a very able and complete scientific paper by Mons. V. Daymard,

On a New Method for Calculating, and some New Methods for Measuring the Stability of Ships at all Angles of Inclination.

In the discussions which followed the reading of the two papers, Dr. Woolley traced the history of stability calculations for some time past. Mr. W. H. White expressed doubts as to the practical utility of the very elaborate investigations undertaken by Mr. Denny, in reference to ships built by his firm. It would, he thought, not be at all necessary to get out curves of stability at

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launching draughts. Due care as to the securing of moveable weights would obviate the risks attending the operation of launching. Mr. Phillips, of Lloyd's, also gave expression to the apparent sense of the meeting, that the stability craze was running too much into intricate diagrams, while something practical and simple was what was really needed.

The next paper, by Professor F. Elgar, was on

## The use of Stability Calculations in Regulating the Loading of Steamers.

After briefly noticing the calculations with regard to stability usually made in the case of war ships, and the instructions for their management based upon the knowledge thus obtained, Mr. Elgar went on to show that in merchant ships the case was altogether different, since while in war ships the position of all the important weights was settled by the designer, in merchant ships the stowage of the cargo, which is often twice the weight of the hull, is entirely out of his control, and rests with the stevedore or master. Evidence given at Board of Trade inquiries is constantly pointing to instability as the cause of loss, although the meaning and weight of the evidence may not always be fully and accurately appreciated at these inquiries. It often diverts attention from the main cause of loss to say that it occurred because the ship was unstable. The fact is, that the ship has frequently so little to do with the matter, and the cargo so much, that it is the latter which should be blamed for the instability, and not the ship herself. When a ship is built for a particular trade and for the purpose of carrying certain specific cargoes, she may then, of course, be so designed as to be quite stable, in all conditions, while thus employed; but when vessels are built, as they often are, to dimensions fixed by owners, for general trading purposes, it is seldom possible for the designer to provide against instability arising in some possible or conceivable circumstances of loading. The due preservation of stability requires in such cases to be watched and provided for by those who control the loading. It is erroneous to suppose, as appears to be sometimes done, that a cargo-carrying steamer should be so constructed and proportioned as to run no risk of becoming

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unstable however she may be laden. The true and reasonable mode of procedure, is not to attempt to construct a ship so that she will be stable, however she may be laden, but to see that any tendency she may have towards instability—if any such exist —is understood by those in charge of her, and that she is always laden with careful reference to it. There are no steamers afloat, whatever tendency they may have towards instability, as sometimes laden, that may not be perfectly safe, if treated with full knowledge of what their stability is, and the stowage regulated accordingly. One great problem that the mercantile Naval Architect has just now to solve is, how any dangerous features of a ship's stability are to be made clearly known to those in charge of her, and in what manner they can be best taught to regulate the loading in cases where special care may be required. It has been said that masters and owners are not only negligent but indifferent in the matter. Mr. Elgar does not believe that such is the case, but that they are deterred by the intrinsic difficulties of the subject. Shipmasters have their own way of dealing with the subject, which are often quite sufficient for the purpose. They have not, however, had the technical training necessary to enable them to understand and deal with metacentres, centres of gravity, and curves of stability. Some owners have recently obtained curves of metacentres, and curves of stability, but these curves are put to no real practical use, as they find themselves unable to apply stability information in this highly specialised form to the accurate and reliable treatment of the various questions that arise in loading, or to compare it with the results of their own judgment and experience. This course has been taken in many cases because of the opinions which have been expressed, that the way to prevent vessels being lost through instability is to supply masters with stability curves, and the Wreck Commissioner appears to entertain no doubt as to the desirability and efficacy of such an arrangement. The advice he gives is based upon the belief that shipmasters can understand the curves, but Professor Elgar has never yet met with one who could so far understand them as to work with them in practice, or who would ever profess that he could do so.



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Reference was then made to the case of the *Austral* and to the stress laid upon the want of such information, but it did not appear that any particulars whatever which would have been supplied to the captain could possibly have had relation to the condition of the ship on the day before the accident occurred. The position of her centre of gravity then was the result of a chance state of things hardly likely to occur again during the history of the ship. The method that Mr. Elgar has adopted and would recommend, is to give the master an account of the ship as follows:—

1. The quantity of ballast, if any, that is required to enable her to stand up when quite empty, without water in boilers or tanks, coal in bunkers, and with a clean-swept hold, and to be stiff enough for all working requirements in dock or river.

2. If she is to be employed in carrying homogeneous cargoes, what portion of the space in 'tween-decks it is safe to fill with such cargo, after the holds are full, and what weight of ballast is required in the bottom to enable the vessel to be loaded to her maximum draught with such cargo.

3. If required to carry two or more kinds of homogeneous cargo, such as grain and cotton; grain and wool; grain, meat, and wool, &c., the best method of stowage, and whether or not the space in the 'tween-decks can be filled with the lightest of the cargoes, and in what circumstances ballast, and how much of it, will be required.

4. If not intended for homogeneous cargoes, but for general cargoes or partly homogeneous and partly general, the average densities of the general goods for various ports is arrived at after a little experience, and the same system adopted. The main point is to state what space, if any, must be left unfilled in the 'tween-deck cargo spaces, with the different descriptions of cargo, and what ballast, if any, is necessary if the vessel is to be loaded to her maximum draught.

5. If the consumption of coal diminishes the stability materially, as is often the case in some classes of steamers, to call prominent attention to this fact, in order that the captain may not be misled by finding his ship to be rather stiff on commencing a voyage.

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The possible consumption of coal is, of course, taken into account in fixing upon the limits that should be imposed upon the stowage in all the conditions named.

6. If there appear to be any circumstances in which a tendency towards instability may arise they are to be described and suitable precautions suggested.

The use of information of this character is rather to supplement than to supersede the knowledge which the shipmaster may acquire from experience of the behaviour of the vessel, and above all it must be given to him in such a way that he can fully understand it.

Mr. Elgar then proceeded to discuss the effect on the stability of a well-decked steamer caused by the well being full of water, showing that it was not so important as has sometimes been supposed. The paper closed with some remarks upon the question of the safe minimum metacentric height, and how, in different classes of ships, it would be governed by different considerations.

The discussion which followed Mr. Elgar's paper was remarkable as eliciting from the Wreck Commissioner, who was present, an explanation of his remarks in recent notable cases which have come before him. He is not to be understood to recommend any special means of supplying information to shipmasters as to the stability of their ships, but only that the information be supplied in some way or other. The futility of his special recommendations as to curves of stability was shown by an incident narrated by one of the speakers during the discussion on one of the stability papers. Recently on a captain taking charge of a new steamer some mysterious documents covered with straight lines, curves, figures, and cabalistic symbols were handed to him by the managing owner. "What are these?" enquired the puzzled shipmaster. "The curves of stability" was the reply. "What am I to do with them?" asked the captain. "O! I don't know, but you will have to give me a receipt for them."

At the evening meeting on the same day, a paper was read by Mr. J. Howden, ON THE COMBUSTION OF FUEL IN FURNACES OF STEAM BOILERS BY NATURAL DRAUGHT AND BY SUPPLY OF AIR UNDER PRESSURE. This was a very long paper, and the conclusions arrived at by its author were of so doubtful a character that we do not propose to occupy any space with it. It was followed by one,



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ON THE APPLICATION OF HYDRAULIC MACHINERY TO THE LOADING, DISCHARGING, STEERING, AND WORKING OF STEAMSHIPS, by Mr. A. Betts Brown. This paper contained a description of hydraulic machinery fitted to some steamers, notably the *Quetta*, belonging to the British India Steamship Company, for the purpose of performing all the work on board except the propulsion of the ship. It is claimed that the hydraulic machinery obviates the noise and jerking and consequent wear and tear of the ordinary winch, and that it does the work quicker and better. The *Quetta* has for prime mover of the hydraulic machinery a pair of engines of 100 indicated horse-power fitted with pumps and attached to a steam accumulator. The pressure of water obtained is 800 lbs. per square inch. Pipes running to various parts of the vessel convey the water under pressure which works the winches, steering gear, &c. The paper, which was of considerable length, contained a detailed description of the machinery, illustrated by diagrams, and from the tone of the discussion it would appear that Mr. Betts Brown has been fairly successful in his application of hydraulic machinery to the working of ships.

The concluding paper on Thursday was, ON CAST STEEL AS A MATERIAL FOR CRANK SHAFTS, by Mr. J. F. Hall. The paper was occupied largely in describing the precautions necessary to the successful casting of large pieces of steel, and also in discussing the efficiency of cast steel as compared with forged steel shafts. Although of much interest to those specially engaged in the work which it describes, we do not think the paper contained much that would interest our readers.

On Friday there were further stability papers by Messrs. L. Benjamin, Jenkins, and Spence, going over much the same ground as those we have already described. There was also a paper ON THE USES OF THE MECHANICAL INTEGRATOR, by the son of the inventor. This was necessarily of a purely technical character. This was followed by a paper ON THE COMPARATIVE SAFETY OF WELL-DECKED STEAMERS, by Mr. T. Phillips, of Lloyd's Registry. Mr. Phillips began by remarking that until a short time ago this description of steamer was viewed with suspicion by underwriters, but this

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feeling has now quite disappeared. Mr. Matthew Gray, of West Hartlepool, recently told the Load-line Committee, that during the last ten years, his firm had built 103 well-decked steamers, of which 11 had been lost from collision or stranding. The percentage of loss was 2 per cent. per annum, whereas the percentage for other classes of steamers was 4 to 4½. Other similar testimony was quoted, and the formation of the special club for insurance of well-deckers was alluded to. The advantages of the well-decked type of vessel are the carriage of a maximum weight of cargo in proportion to weight of hull; superior conveniences in carriage of grain cargoes owing to there being no 'tween-decks laid, and better protection to the engine-room openings. Mr. Phillips described in detail the construction of the bridge, bulkhead, and the arrangement for securing strength at the break. He also discussed at some length the question of the stability of well-deckers, and the nature and arrangement of freeing ports. He also gave figures as to the stability of a vessel of this class which he has recently inclined, showing that the maximum righting moment is reached at 46½°, and the angle at which the stability vanishes is 80¼°. He was of opinion that the open ports recently recommended for these vessels by the Board of Trade were rather a source of danger than of safety. In the course of the discussion which followed, the cause of the well-deckers was eloquently taken up by Mr. Withy, and although their economical advantages were doubted by some speakers, nothing was said against the safety of this class of vessels which a few years ago were almost universally condemned by seamen.

The next paper, by Mr. A. Taylor, was:—

A Description of Taylor's Stability Indicator for Showing the Initial Stability and Stowage of Ships at any Displacement.

Mr. Taylor proposes to have fitted on board each ship an apparatus by which any one can perform an inclining experiment and so ascertain the position of the vessel's centre of gravity, by means of which and the results of calculations as to the position of he metacentre for various draughts, information may always b obtained as to her stability. The experiment may be performed

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in harbour or even at sea in reasonable weather and need not occupy half an hour.

At each side of the ship is fixed a suitable tank of known capacity, the distance between them being also known. There are also fitted on one side of the ship a small reservoir, and on the other a vertical glass gauge, the middle of the glass gauge being the same height as the middle of the reservoir and being connected with it by top and bottom pipes, so as to form a complete circuit. The lower parts of the reservoir and gauge and the lower pipe connecting them contains glycerine. When the vessel is upright the top of the glycerine stands in the middle of the gauge; supposing the gauge to be on the port-side when the vessel is listed to port the glycerine rises, when she lists to starboard the glycerine falls, and thus by the height of the liquid the angle of the heel is ascertained.

The inclining experiment is made by first filling one tank with water with the deck hose or other means, then observe the height of the glycerine in the gauge, next empty that tank and fill the tank on the other side, then the difference of reading in the gauge gives the angle of heel due to the removal of the water in the tank from one side of the ship to the other.

The weight of water contained by the tank is a fixed quantity, and so is the distance between them, and thus there is prepared for each ship a table, from which, to make matters clear, we extract a few lines, as follows:—

| Degrees of Heel. | Draft in Feet. | | | |
|---|---|---|---|---|
| | 10. | 11. | 12. | 13. |
| 1 ..... | 13·17 | 11·46 | 10·31 | 9·39 |
| 1¼ ..... | 10·54 | 9·16 | 8·25 | 7·52 |
| 1½ ..... | 8·78 | 7·64 | 6·87 | 6·26 |
| 1¾ ..... | 7·53 | 6·54 | 5·89 | 5·37 |
| 2 ..... | 6·58 | 5·73 | 5·15 | 4·69 |

If now, after performing the experiment, it is noticed by the gauge that the vessel has heeled, say 1½ degree, and her mean draught be 12ft., by the table her metacentric height is 6·87 inches. The lines we have given are of course but a small piece of the

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table to illustrate its use. Another means of doing the same thing is by a roller scale, having the metacentric curves engraved in it for various draughts.

It has been objected to Mr. Taylor's proposal that the presence of loose water in the bilges would vitiate its result. His answer to this is, that the ship goes to sea and encounters the peril of the sea with this loose water. The argument appears to be that if the result of the experiment is not, under all circumstances, the true metacentric height, it at all events is valuable as indicating the stability of the ship. Mr. Taylor also stated that the experiment could be performed while the vessel was under way in a comparatively smooth sea, since glycerine being a sluggish liquid its mean level can be correctly noted. One vessel having this instrument fitted for the first voyage, left Cardiff with 11 inches metacentric height; next voyage, with a similar cargo, by paying a little more attention to the stowage, the metacentric height was increased to 14 inches. In each case, after eight days out, and using coals from the top bunkers, the metacentric height was increased about 2 inches. Mr. Taylor then quoted a letter from Captain Stacey, a shipmaster, who has made practical use of the stability indicator. He says: "With light cargoes, by trying it before leaving port, I know exactly how the ship is going to behave in a gale of wind. If the indicator stands at less than 10 inches, I run up one of the ballast tanks, but if at 10 inches or more, then I am perfectly satisfied that the ship is fit to face any thing as far as her stability is concerned."

In the discussion which followed the reading of this paper, Professor Elgar called attention to the fact that if the inclining experiment was performed on a vessel under way, the result was certainly not the metacentric height; it appears to us that if this or any other such apparatus come into practical use, the caution is very necessary; and it must be remembered that the true metacentric height can only be obtained with the vessel at rest, so moored that her moorings cannot incline her, and with no loose water in the bilges. It may be of use to make the experiment with such disturbing conditions, but it must be remembered that results of experiments can only usefully be compared when the disturbing

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conditions are similar, or when their effects can be measured and eliminated from the result.

At the evening meeting on Friday, which concluded the Session, the first paper was one by Mr. H. H. West, of the Liverpool Underwriters' Registry,

On some Considerations Respecting the Rivetting of Iron Ships.

After noticing the rules of the two registers as to the proportion of rivet area to the sectional area of the plates connected, Mr. West came to the conclusion that rivet strength in iron ships is generally deficient. Calculations upon the subject which have been made have been upon the supposition of a steady pull upon the joint; as a matter of fact the strains are not always equally distributed over the whole width of each joint, one edge being often more severely strained than the other, the strains are not constant, but are alternating in direction, and are compounded of twisting and transverse as well as of tensional and compressional strains, the strains are not steadily and continuously applied, but come with sudden shocks and jerks, and the structure, whilst sustaining these severe and complex strains, is often subjected to the impact of the most terrible shocks of the sea. These conditions favour the development of slipping between the forging surfaces of the joints, and, in Mr. West's opinion, the whole question of rivet area needs reconsideration. Mr. West gave some notable instances of defects noticed in some cases after the first voyage of new iron steamers, well-built and apparently strong enough, but having, in his opinion, insufficient rivetting. He advocated the use of double butt straps in some cases, and concluded by expressing his opinion that it was to machine rivetting that we must look as one great means of improving the rivetted joints of iron ships.

The next paper was by Mr. James Webb, of Lloyd's Register, on the

Ventilation of Merchant Ships.

Mr. Webb proposes to ventilate the cargo holds of merchant steamers by means of perforated pipes carried round to each hold, and then continued by pipes (not perforated) to the funnel casing,

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trusting to the heat of the funnel casing causing a draught through the pipes. Fresh air is to be supplied by bent pipes from 2 to 4 inches diameter and about 12 inches high, secured to the deck, having a valve which would close automatically to keep water out.

The concluding paper of the session was one by Captain Heathorn, on the use of the balanced rudder as a brake to stop the way of ships.

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## STABILITY OF SHIPS.

WHEN examined before the Select Committee of 1880 on the Merchant Shipping Bill, Sir Thomas H. Farrer gave information as follows, which distinctly shows that in the opinion of the Board of Trade want of stability was the cause of loss of many ships. It is possible that owners and masters were ignorant of this, but at any rate the same charge cannot be laid at the door of the Board of Trade :—

" 5,723.—Chairman : I think what you say is that the cases of those ships would have been a special subject of inquiry before you, even if there had been no agitation?—Most certainly ; I should like to read a passage from a minute of Mr. Gray, of a later date, which is not simply his, but is the result of a great deal of what had been collected and done in the course of the summer by himself, by Captain Murray, and other officers of the Board. He says : ' Prominent features in all these twelve cases seem to be the low platform, the water-ballast tanks, a ceiling raised from 18 to 30 inches above the ordinary ceiling of a vessel for the purpose of keeping the grain dry, and possibly a depth of hold which of itself ought to call for special attention in loading and stowing, and in allowing for freeboard. It is remarkable that of the eleven steamers lost in the Atlantic trade, only one is not described as having three tiers of beams ; steam vessels which appear to have a greater width of beam in proportion to their depth, and the class to which the

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lost vessels belong, seem to have been put into the same trade and to have survived. The inference from all this is that certain vessels possessing certain characteristics and of certain peculiarities of construction, carrying a certain (high) proportion of dead weight as compared with gross tonnage, and having little or no stability, engaged in carrying grain and other cargoes, are not fit to encounter the Atlantic waves in winter, and that numerous disasters occur in consequence. All this seems to be fair subject for inquiry.' Upon the memorandum in which this passage is contained, Lord Sandon made the following minute:—'In the case of all ships reported to the Board of Trade as foundered or missing, an inquiry should hereafter be ordered. It will be also very desirable that statements should be drawn up in the office showing the main features of each similar case which have been brought to light by each of the recent inquiries.'

"5,724.—In accordance with what you have said to be the usual practice of the Board of Trade, these cases would have been specially inquired into under any circumstances?—Certainly; these particular cases to which Mr. Gray's paper referred."

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## EXAMINATION OF MASTERS AND MATES FOR THE COASTING TRADE.

### (DOMINION OF CANADA.)

DURING the last Session of the Dominion Parliament an Act was passed respecting certificates to masters and mates of inland and coasting ships, the rules and regulations of which are as follows:—

RULES AND REGULATIONS for governing the examination of candidates for certificates of competency or service as masters and mates under the provisions of the Act 46 Vic., chap. 28, intituled, "an Act respecting certificates to masters and mates of inland and coasting vessels."

Qualifications for certificates of competency for masters and mates employed in navigating the inland waters of Canada, or engaged in the coasting trade between Quebec and any of the lower

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ports; or in the coasting trade between Canada and Newfoundland, or between Canada and a port in the United States of America.

COMPETENCY.

*Coasting trade from one port in Canada to another port in Canada or to a port in the United States of America or Newfoundland.*

1. *All candidates* must pass the examination in colours.

2. A *mate* must be 19 years of age, and have served at least two years at sea.

3. *In Navigation.*—He must write legibly, and be able to find his latitude by a meridian altitude of the sun; must be able to take a bearing by compass, and determine his position by cross-bearings on the chart, and to shape a course and determine the distance run from any given departure.

4. *In Seamanship.*—He must possess a thorough knowledge of the "rule of the road," as regards both steamers and sailing vessels, their regulations lights, fog and sound signals; he must know the signals to be made if in distress; he must understand both the lead and the log, knotting and splicing rigging, and stowing a cargo. He will be examined in seamanship generally, either for "square rig" "fore-and-aft" or "steamer," as the case may be. If in the latter, he must have a knowledge of the fittings for fire purposes, the bulk-head sluices, if any, and the engine-room telegraph, the securing and lowering of the lifeboats and life-rafts. The examiner will ask any other questions he may think fit relating to the duties of a mate.

5. A *master* must be 21 years of age, and have been at sea at least three years, one of which he must have been as mate.

6. *In Navigation.*—In addition to the qualifications for a mate, he will have to explain how he would shape a course to counteract the effect of a given current, and find the distance made good towards a given point in a certain time.

7. *In Seamanship.*—In addition to the qualifications for a mate, he must know the principal lights upon the coast, and be well acquainted with the tides and soundings. He will be required to explain how he would lay out an anchor in case of stranding, and be able to rig a temporary rudder should the steering apparatus

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become disabled. He will be questioned as to his knowledge of protests, invoices, charter-party, bottomry, bonds and bills of lading. The examiner will ask him any further questions he may think fit relating to the duties of a master.

*For the Great Inland Lakes or Minor Inland Waters of Canada.*

8. This certificate shall be valid for the inland lakes and rivers of Canada, including such great waters as Lake Huron and the Georgian Bay, Lake Superior, Lake Erie and Lake Ontario.

9. All candidates must pass the examination in colours.

10. A *mate* must be 19 years of age, and have served at least two years at sea, or on the inland waters.

11. *In Navigation.*—He must write legibly, and be able to take a bearing by compass, and determine his position by cross-bearings on the chart. He must be able to shape a course, and determine the distance run from any given departure.

12. *In Seamanship.*—He must possess a thorough knowledge of the "rule of the road" as regards both steamers and sailing vessels, their regulation lights, fog and sound signals; he must know the signals to be made if in distress; he must understand both the lead and the log, knotting and splicing rigging, and stowing a cargo. He will be examined in seamanship generally, either for "square rig," "fore-and-aft" or "steamer," as the case may be. If in the latter, he must have a knowledge of the fittings for fire purposes, the bulk-head sluices, if any, and the engine-room telegraph, the securing and lowering of lifeboats and life-rafts. The examiner will ask any other questions he may think fit relating to the duties of a mate.

13. A *master* must be 21 years of age, and must have been at sea or on the inland waters at least three years, one of which he must have been as mate.

14. *In Navigation.*—In addition to the qualifications for a mate, he will have to explain how he would shape a course to counteract the effect of a given current, and find the distance made good towards a given point in a certain time.

15. *In Seamanship.*—In addition to the qualifications for a mate, he must know the principal lights upon the great inland waters;

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he will be required to explain how he would lay out an anchor in case of stranding, and be able to rig a temporary rudder should the steering apparatus become disabled. He will be questioned as to his knowledge of protests, invoices, charter-party and bills of lading. The examiner will ask him any further questions he may think fit relating to the duties of a master.

*For the minor lakes and rivers in Canada, such as Lake Simcoe, Lake Memphremagog, the River St. Lawrence above Quebec, the Ottawa River, the River St. John and adjacent lakes, or any river or lake in British Columbia, or in Manitoba, or the North-West Territories, or in the district of Keewatin.*

16. A *mate* must be 19 years of age, and have been at least two years afloat.

17. All candidates must pass in colours.

18. *In Navigation.*—He must be able to shape a course upon the chart, and find his position by cross-bearings of two well known objects; he must be able to measure distances upon the chart, and be able to keep the run of the vessel.

19. *In Seamanship.*—He must understand how to use the lead. He must possess a thorough knowledge of the "rule of the road," both for sailing and steam-vessels; he must be able to knot and splice, to fit and rig a "fore-and-after." He must understand the stowage of cargoes, and the general management of vessels in bad weather. If examined for a steamboat, he must understand the use of springs on going to or leaving a wharf; he will have to explain the usual modes of extinguishing fire on board ship. He will explain the securing and lowering of lifeboats and life-rafts. The examiner will put any further questions he may think fit, appertaining to the duties of mate.

20. A *master* must be 21 years of age, and have been at least three years afloat, one of which he must have served as mate.

21. *In Navigation.*—In addition to the qualifications for a mate, he must have a knowledge of the principal lights upon the lakes or rivers he is about to be employed upon; the principal dangers in that locality; the courses and distances to be run to avoid them.

22. *In Seamanship.*—In addition to the qualifications for a mate,

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he will have to explain how he would lay out an anchor in case of his vessel becoming stranded. He will be examined as to his knowledge of protests, invoices, charter-party and bills of lading. The examiner will ask any further questions he may think fit, relating to the duties of a master in the inland waters.

*Service.*

23. A candidate for a certificate of service will require to produce satisfactory evidence of sobriety, experience, ability and general good conduct, and furnish the name or names and class of vessels in which he served as master or mate, as the case may be, previous to the 1st January, 1883.

24. All candidates must pass the examination in colours.

## "WRECK INQUIRIES."*

THERE can be little doubt that whatever may be the outcome of the proposed legislation for the protection of life and property at sea, Courts of Inquiry into Shipping Casualties or, as the author of the work we are about to notice, shortly calls them, Wreck Inquiries, have become permanent institutions. In the abundant discussions which have been going on in reference to Merchant Shipping ever since Mr. Chamberlain's proposals for fresh legislation were first made public, the working of the Courts of Inquiry has been the subject of much keen criticism, and public attention has been prominently directed both to their constitution and method of procedure. At such a time, then, the appearance of a work on the subject from an author so well qualified to deal adequately with it as the Solicitor to the Board of Trade is a great public

* The Law and Practice relating to Formal Investigations in the United Kingdom, British Possessions, and before Naval Courts into Shipping Casualties, and the Incompetency and Misconduct of Ships' Officers; with an Introduction. By Walter Murton, Solicitor to the Board of Trade. London: Stevens & Sons, and Pewtress & Co., 28, Little Queen Street, W.C.

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benefit, and will be welcomed by all who are interested in shipping questions.

No one who reads Mr. Murton's work will be able to deny firstly, that the task which he undertook was full of difficulty; and, secondly, that the difficulties have been admirably dealt with. Until Mr. Murton took the subject in hand those who had to take part in investigations into shipping casualties, whether as judges, assessors, parties, or witnesses, had none of the assistance which those who have to take part in other judicial proceedings have in text-books of authority, reports, collections of decisions, and other means of quickly and conveniently obtaining information as to law and practice. Hitherto information relating to the constitution of the Courts of Inquiry could only be found hidden away in the pages of some one of the singularly fat modern text-books on Merchant Shipping; and information as to the practice of the Courts did not exist in any book at all. And to make matters worse, the statutory enactments on the subject of Wreck Inquiries are curiously complex, and require an amount of reference backwards and forwards among Merchant Shipping Acts sufficient to baffle and bewilder anyone who required to know what the constitution and procedure of Courts of Inquiry into Wrecks were.

What was required, therefore, was that the tangled mass of statutes should be unravelled, the practice and authorities collected, and the whole produced to the public in a readable and workable shape. This is what Mr. Murton has done, and done most skilfully. Those who have to appear in any capacity in Wreck Inquiries will find in Mr. Murton's work all that they can want. The statutes are carefully digested and arranged, the practice is lucidly explained, and the principal decisions are quoted and commented upon. Moreover, in the Appendix there are abundant materials of the most useful kind,—the more useful because they practically cannot be obtained elsewhere. To these we shall advert later on.

But "Wreck Inquiries" is not a mere legal text-book or practitioner's manual. It deals with the public, and at the present time deeply interesting question of the Legislative action of the last few years in the direction of the preservation of life and property

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at sea, and as such is a most valuable contribution to the discussion of this subject. It is from this point of view that Mr. Murton's book will possess for the general reader an interest which an ordinary work upon the law and practice of a Court of Justice cannot have.

What may be called the public aspect of Wreck Inquiries is most prominently dealt with by Mr. Murton in his introduction, which contains a history of the origin and development of the system of Government Inquiries into shipping disasters, and a statement of the broad results of its working. The author in this part of the work calls prominent attention to a point too often overlooked by those who in the freedom of their criticism call in question the use of inquiries into shipping disasters. He points out that "the usefulness of inquiries for administrative purposes may be said to begin when the public proceedings come to an end." Courts of Inquiry are not merely Courts to inquire whether some one is or is not to blame. One of the most important functions of a Court of Inquiry is to report fully to the Board of Trade upon the causes of the casualty which is the subject of the inquiry. The reports on the inquiries form the basis of action on the part of the department, all of which tends, and tends most materially, to the security of life and property at sea. Moreover the publicity of inquiries has had a most salutary effect in producing caution in those who are charged with the duty of sending ships to sea, and in calling public attention to defects which are capable of being guarded against in the future.

In his first three chapters Mr. Murton deals with the constitution of Courts of Inquiry, and in his fourth chapter describes their jurisdiction and powers. As regards jurisdiction over individuals, the Courts of Inquiry exercise double functions. They have certain limited powers of punishment; they can also report upon and censure misconduct. Mr. Murton has, and we think most judiciously, devoted much attention to showing what misconduct or mismanagement will render a master or officer liable to punishment at the hands of a Court of Inquiry. In matters of discipline and navigation the Courts have a quasi-criminal jurisdiction; and it is all important therefore to those who are subject to this jurisdiction to know

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what acts do and what acts do not render them liable to punishment.

The procedure in Inquiries is next dealt with, and here the author has in our opinion done one of the most valuable parts of his work. Inquiries are held in all parts of the country, one may say, almost daily. The practice in them is in many respects new and unlike that of other Courts, and confusion is often apt to arise from the inclination of legal practitioners to treat the subjects of inquiry as if they were the narrow issues raised in an ordinary law suit. In the interest therefore of obtaining uniformity of practice, it is most important to have an authoritative exposition of the rules and practice. And this is what Mr. Murton has given us. The entire practice in investigations is exhaustively dealt with, each rule of practice being carefully explained and its effect described. On one point in particular Mr. Murton's observations are of particular importance, that is on the question of evidence. The subject constantly arises for discussion in Wreck Inquiries whether this or that question is or is not admissible as evidence. The usefulness of these Inquiries would be greatly impaired if the highly technical rules of evidence which prevail in criminal and civil tribunals were too closely adhered to in Courts of Inquiry. Mr. Murton points out that all questions are admissible which are necessary and material for eliciting the truth as to the causes of the casualty. Again, a feature, peculiar to the practice in Wreck Inquiries, is the "Questions for the Opinion of the Court." These questions are the foundation of the judgment of the Court, and the basis on which it makes its report. Their form and nature are therefore most important. Mr. Murton has considerably added to the usefulness of his book by inserting a large collection of forms of questions. These will not only be of assistance to those who have to frame questions, but also will assist in promoting a uniformity of practice in the different Courts.

A feature in this book is the part devoted to Colonial Courts of Inquiry and Naval Courts. The author in his preface makes some apology for the introduction into his work of these subjects. The apology was needless. Owners, masters, and officers may have to take part in inquiries in all parts of the Queen's dominions, and



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it is almost as important for them to know what are the constitution and procedure of Colonial Courts and Naval Courts, as to know the constitution and procedure of the English Courts. Moreover, to the general reader interested in shipping questions, this part of the work will be new and interesting.

Anyone who has ever had anything to do with the composition or construction of a legal work, knows how great is the difficulty of constructing an adequate index; and anyone who has had to use a legal book of any kind knows how rare a good index is, and how much it detracts from the use of a book if the index is not good. Some people (authors included) think that an index is an easy matter, or at most, a matter of mere labour. But in fact a good index requires both considerable skill and unwearied labour. It is therefore awarding no light praise to Mr. Murton's book, to say that the index is excellent and has the rare quality in which many an index is deficient, of assisting one to find the thing one wants.

In conclusion, we think that the public may be congratulated on the acquisition of a most valuable addition to its stock of information on a subject on which information was greatly needed, and that the author may be congratulated on having produced a work which will hereafter be the leading text book and authority on the subject with which it deals.

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## THE LOAD-LINE—A WORD TO THE WISE.

THE burning question between the Board of Trade and the shipowners has in the past been the "Load-line." If, therefore, the load-line of any ship be once settled there can be no doubt that differences of opinion between the staff of the Board of Trade and the shipowners comes to very nearly a vanishing point. There are persons who will differ from constituted authority on everything on which they can invent any ingenious pretext to bear out their theories or opinions. It seems that to differ from authority on any and every minute point is to a certain order of minds a token of great wisdom.

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This is all very well so long as it goes no further than an indulgence in crochets which do not affect the welfare or jeopardise the lives of others. In matters connected with the daily business of shipping such an attitude is simply unintelligible and mischievous. Seeing that the Board of Trade is a centre to which information on all subjects maritime is necessarily communicated, and that the Board of Trade must of necessity act as a rule on full information (and that it does not consist of three clerks as Mr. John Glover, in what we venture to suggest to him, must have been a fit of indigestion, recently stated), a desire of this sort on the part of individuals, as, for instance, in such a case as the load-line of ships, must arise from one or two causes, that is to say, either from pure ignorance, or from selfishness. There are shipowners who desire to sail their ships with a load-line fixed on no principle whatever as regards the safe capabilities of the ship, and fixed only on the principle that so many dead weight tons have been carried, or ought to have been, before in the same ship or in a similar ship. Owners, however, who do this, are sure to present a sorry figure when they appear in the "Wreck Court." There are, we may say, three classes of owners, of which the first class are those who never load a ship down to the load-line that would be given by the Trade Association known as Lloyd's Register; this class of shipowners never get into trouble as to overloading; the second class consists of owners who load their ships down to *any* point that for the moment pays well, and who then plead ignorance on their own part in the event of disaster, and claim that they must have been right or their ship would have been detained by a Board of Trade officer. This may be called the "hedging class." They must load their ships properly (so they say), or "the ship would be detained." Comment and illustration are alike unnecessary. There is a third class. In this class is included that large percentage of fair dealing and honest men who, desirous of doing what is right, are equally desirous of avoiding the notoriety attendant on figuring as controversialists: men who wish to prosecute their business unobtrusively and honestly. A very great number of these owners are applying to the Board of Trade to agree upon a load-line before their ships sail, so that



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they may be safe from detention by the Board's staff, and so that no question may arise afterwards as to overloading.

The Board of Trade, we find, have for a time been issuing documents which are known as "load-line certificates." These documents are carried on board the ship, and when once obtained there is as to freeboard no further trouble with crews, Wreck Courts, or Government officers. This is, we believe, an open secret; for though the Board of Trade have not advertised it it is pretty well known. It came upon us as a surprise when we found that many amongst the leading shipowners of Liverpool had placed these certificates on board their ships, for as a fact detentions for overloading at Liverpool have been very few. It may be a matter of regret that the Board of Trade have not made their practice generally known; as it is possible that had they done so instead of the (? fifty) owners per week who now apply for "load-line certificates" the number would be double or treble, and the duties of the Board's out-door staff would be greatly facilitated; and there would be an end to trouble with the crew on the question of clear side. The staff of the Board of Trade have, we learn, as yet not delayed a ship in any instance in which a load-line certificate has been applied for, and seeing the resources at the command of the Board it does not appear that delay is likely to arise.

The Load-line Committee now sitting will necessarily, in the course of some months, throw great light on the subject of the loading of ships by an able and exhaustive report, but in the meantime there can be no doubt that shipowners who apply to the Board of Trade, and get the load-lines of their ships agreed to and certified by the department will be in a very strong position should any new departure be taken. That some hundreds of "load-line certificates" have already been issued by the Board of Trade is a certain proof that owners who wish to load their ships fairly are in no way prejudiced, as in applying the tables each ship is taken on her own merits.

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## OUR PARLIAMENTARY RECORD—SESSION 1884.

*Over Insurance.*—In the House of Commons on Monday, March 24, 1884, Mr. O'Donnell asked the President of the Board of Trade "whether, in view of the discussion of the Merchant Shipping Bill, he would give the number and the names of the over-insured vessels which, to the knowledge of Her Majesty's Government, had been lost at sea during the period of the past five years."

Mr. Chamberlain: "I am sorry to say I have no information as to the amount of insurance effected in the great majority of cases on the vessels which have been lost during the last five years. Insurance is a private contract, and I have no means of obtaining these particulars. Recently I have instructed the Board of Trade representatives to make special reference to insurance in all the inquiries held before the Wreck Commissioner, but where the owner declines to give the information asked for I have no power under the present law to compel him to do so."

Mr. O'Donnell further asked "whether there was any truth in the statement which had appeared in the public Press, that the representatives of the shipping interest had proposed terms of arrangement to him on the subject of the Merchant Shipping Bill; and whether he could state the nature of those terms."

Mr. Chamberlain: "I have not seen the statement referred to by the hon. member, and if such a statement has been made it is not true. Individual shipowners have offered suggestions, many of which I shall be glad to adopt, and I have always expressed my readiness to consider favourably any proposals for the amendment of the Merchant Shipping Bill which do not conflict with its main objects."

In answer to Mr. Burt,

Mr. Chamberlain said: "I am unable to state in what proportion of the agreements with seamen going on foreign voyages stipulations have been made for the allotment of part of their wages to their friends; but in almost every case of a vessel proceeding on a foreign voyage allotment notes have been granted to some members of the crew. The only instances of seamen availing themselves

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of the power to allot a portion of their wages to savings banks have occurred at the Victoria Docks. The number of cases is 15, and the total sum received from owners and credited to the seamen's savings bank is £246 10s. In no case have the Board of Trade prevented a seaman while abroad from withdrawing money from a savings bank in the United Kingdom. (Hear, hear.)

On Monday, March 31, 1884, in reply to Sir W. Hart Dyke, Mr. CHAMBERLAIN said "he had already seen a deputation of pilots, which included some representatives of Thames pilots. It was understood that they would be prepared to forward him some scheme of compensation in case their interests were injuriously affected by the Bill; and he promised to give it fair consideration. If they wished for a further interview he should be glad to make arrangements for one before the Bill got into Committee."

## CORRESPONDENCE.

### THE LOAD-LINE.

*To the Editor of the "Nautical Magazine."*

SIR,—I have read several of the methods proposed for fixing a load-line for ships; but I have not seen one which is so likely to suit all kinds of ships as that which I am about to submit to you. It is very simple and may have been tried before, if so, please excuse me for troubling you.

If the weight of a ship when empty be found by measuring her displacement or by other means, and to this weight be added that of all cargo and stores placed on board of her, the result will be that weight which it is required to lift over the crest of each sea with sufficient rapidity to prevent that sea rushing on board of her, and to lift which is required an amount of spare buoyancy which in all ships will bear the same proportions to the weight to be lifted, when they are loaded to the greatest depth that is consistent with safety.

To determine what this proportion should be there are two methods, a theoretical and a practical one, although the latter is in

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my opinion the one to be relied upon. In theory, the approximate velocity may be found at which the ship must rise to pass over a sea driven by an average hard gale, and with a knowledge of mechanics the force may be found which is required to arrest the ship's downward plunge and lift her at the required velocity. In practice, one or more ships may be taken, which are admitted by those who have sailed in them to be fairly well and yet safely loaded, and their weights in that condition compared with those at which they would sink if all apertures were closed. In fixing a ship's load-line by this method it would only be necessary to find by measurement or otherwise the weight required to sink her, and divide the sum of that and her own weight in such manner that her burden and her spare buoyancy shall bear the required proportion to each other.

WM. T. ASHBY,

March 19th, 1884. S.S. *Lady Dalhousie.*

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## CAPE FINISTERRE.

*To the Editor of the "Nautical Magazine."*

Dear Sir,—Having for upwards of seventeen years commanded steamers bound to the East Indies, China, and Australia, I have had to pass Cape Finisterre many times in the course of each year, and have hitherto waited patiently for some improvement in the chart of this dangerous locality. On the latest Admiralty Chart (No. 2728), corrected up to August, 1882, the soundings are of the most meagre description.

Nearly due west of Finisterre Lighthouse, distant 5 miles, there is on the chart 87 fathoms without the nature of the ground being given; 3½ miles due north of this is 23 fathoms; proceeding north there is no other sounding given for nine miles where 70 fathoms is given; 3 miles W. by N. of Cape Torinana, nearly due north of this latter position, is 92 fathoms; and N. 35° E. 15 miles from this is another sounding of 92 fathoms. None of these having any notice of the nature of the ground, renders them comparatively useless.

Would it not be possible for some of Her Majesty's vessels during the coming summer to take an accurate set of soundings

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and chart them, say from 10 miles west of Finisterre round the coast to 10 miles north of Cape Ortegal? Such would be an immense boon and saving of anxiety to navigators, and of time and consequent expense to shipowners. In thick weather it is now impossible to approach this vicinity with any confidence in the lead, and much time is lost in having to give it a wide berth. The frequent but irregular strong indraught into the Bay of Biscay requires the utmost caution, and renders the improvement which I suggest doubly necessary.

I feel sure that I am expressing the opinion of a large majority of Commanders when I say that rounding Cape Finisterre in thick weather, particularly when coming from the northward is, from the defective state of the best existing charts, the most anxious and critical part of the whole voyage from England to India, China, or Australia. I would also beg to point out the great necessity of a better light on Cape Villanos; the present one is only of the fourth order, visible ten miles; it is hardly ever to be seen at this distance, except in the finest weather. There is no locality in any part of the world that I know of, where a first-class light is more urgently needed. The light on Cape Finisterre is a fairly good one, but not always reliable from its height (466 feet). It is often obscured by cloud or mist, but a vessel coming from the northward would be in danger before it is open of the high land to the northward of it, and, as I have already said, Villanos light is not to be depended on. In the hope that others may join me in endeavouring to induce the proper authorities to take immediate steps in this important matter,

I am, dear Sir, faithfully yours,

ARTHUR E. BARLOW,

Commander P. & O. s.s. *Paramatta*.

At sea, March 30, 1884.

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## CARGO-STEAMERS AND OVERLOADING.

*To the Editor of the "Nautical Magazine."*

Sir,—I have been looking through the description of our modern cargo-steamers, as given by one signing himself "Master Mariner" in your last month's Magazine, also one in this month's Magazine,

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signing "Collier Skipper." It is a black picture to place before the public, but not one whit blacker than it really is. But could be remedied if our legislators would decide not to allow ships and steamers to load so deep. I do not know what freeboard is proposed for the future, but for a fair chance for a ship or steamer to pull through a storm, she ought not to have less than 2 inches to the foot for depth of hold of 12 feet increasing to 2½ inches to 16 feet depth of hold, and nothing less than 3 inches when 20 feet depth of hold is reached. "Master Mariner" says the normal position of the Tramp in heavy weather is, or should be, "end on" engines dead slow, with reefed after canvas, sheets in midships to pick her up as she falls off on either side, stand by telegraph to help her if wanted; under any other treatment she will be missing. And to this *I* must add, it is only in the most favourable gales that this can be accomplished, such as a gale that blows itself out from the same direction, or veers very gradually, with a gale veering suddenly from four to eight points. Where would the "end on" of the loaded down Tramp be then, with her decks nearly level? Why the chances are that she would be gone below in less minutes than I named points above. Owners or companies that load their ships or steamers with less freeboard than I have named above (or are allowed to continue to do so) should sail them themselves for a few years, and those who might be fortunate enough to survive through favourable weather, would be ready to agree that the freeboard I have named above is small enough.

Not long since I asked the master of a Tramp how his crew managed to get along the deck? He smiled, and said I have seen them watching for half an hour a chance to do so when relieving watches. The master himself seemed principally afraid when in bad weather of the sea staving in the hatches. I also, about the same time, saw a Tramp and a brig of about the same carrying capacity (500 tons), the former had a load-line of 1 foot 4 inches, the latter 3 feet. Some time since I read in the *Shipping and Mercantile Gazette* in bad weather a steamer's decks were never free from water, not even heavy water. What does this mean? I should say shameful overloading.

A good deal has been said about over-insurance. If owners

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wish to be above suspicion they should not insure for the full cost. I insured with others in partnership a good many years, but never up to cost of ship. I was wrecked in 1851, on that occasion I lost fully 50 per cent. on cost of ship. Of course I do not presume to say owners ought to lose heavily by loss of ship, but I do think they ought to take part of the risk. Now, with your permission, I would like to make a few remarks on the other side. Place the load-line on a safe scale, then I fancy owner's liabilities in other respects are quite heavy enough. The class of people that is got together for crews is a serious drawback in the navigating of ships, and they are allowed too much scope to tamper with their contracts. If a ship is detained otherwise than for unseaworthiness the owners ought to be compensated. I see your correspondent, signing himself "Seaman," from Port Said, complains of a great ugly opening, 6 ft. 2 in. by 2 ft., that the Board of Trade has had cut in the main bulwark, and the great rush of water through the same, endangering some of the vital parts about the decks. It is, of course, the vital parts about a ship's deck that constitute the chief danger to an overloaded ship in bad weather.

Turning again to this ugly opening, I would say in place of it fit some small ports in the bulwark that would let the water of the deck run out, but let none in from the outside. I see by a letter in to-day's *Standard* (27th), they have been taking ladies' money, from £500 to £1,000 each, for shares in ships or steamers, and from what little I know of shipping matters, shame for them to do so.

Also, in a recent letter to the editor of the *Standard*, a gentleman says the main cause of losses at sea is probably overloading. No doubt it is, and if ships were not fully or over insured, there would not be so much overloading. Again, this gentleman says, "But I submit that safety to seamen cannot be obtained by driving the business of underwriting into the hands of foreign capitalists, who have already made such great efforts to obtain it." *Give* the ships, especially steamers, more freeboard, then the seamen's safety after will depend mainly on their own abilities, but no ability will save those villainous things and their crews, loaded down nearly to the water's edge, if they meet with really bad weather.

OLD SALT.

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## BALLAST.

*To the Editor of the "Nautical Magazine."*

SIR,—I shall esteem it a favour if you will kindly give me some information in your next issue as to whether a master is responsible for the shipment of ballast.

Some stuff, which looked all right, was put on board a ship. It subsequently turned into a muddy mixture, choked the pumps and the vessel was abandoned full of water.

Could the master be considered to have committed a wrongful act or default in shipping this ballast, for which a Court of Inquiry would deal with his certificate?

Your obedient Servant,

15th April, 1884. T. LOILE.

[This question has been dealt with in "Wreck Inquiries" and the responsibility of the master was decided by the Wreck Commissioner and subsequently by the Admiralty Division of the High Court. The master having authority from his owner to provide ballast without restriction as to price, obtained rubble, rubbish and building refuse, but better material could have been obtained at a higher price. The Court found the master in default and suspended his certificate. An account of the Inquiry and of the appeal will be found in the book of Mr. Murton, the Solicitor to the Board of Trade.—ED. *N. M.*]

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## NAVIGATION BETWEEN TABLE BAY AND NATAL.

*To the Editor of the "Nautical Magazine."*

SIR,—In the March number of your Magazine I read Mr. Whall's criticisms on a paper by Captain Hepworth which appeared in your February number entitled "Remarks upon Steam Navigation between Table Bay and Natal," and I venture to think the criticisms of that gentleman might have been of more value had he carefully perused the article in question.

In the first place Captain Hepworth states that the paper was written in the hope it might be of some use to navigators who were

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strangers on the South African Coast; I do not suppose he imagined it could be of interest to one who possesses such extensive experience as his critic.

Mr. Whall appears to take exception to Captain Hepworth's having mentioned the existence of a N.W. by W. current between Cape L'Agulhas and the Cape of Good Hope, simply for the reason that it was marked on the chart published by the Meteorological Office, but I fail to see why this circumstance should debar him from doing so. I also find it difficult to understand how the fact that "a ship in Table Bay has recorded a sea surface temperature of only 51° after experiencing one of 78° in nearly the same latitude to the east of the African Continent should be well-known to any one who has indulged in a morning swim about the Cape Town wharves." What supposition Mr. Whall attributes to Captain Hepworth in reference to the L'Agulhas current I cannot comprehend.

Being of opinion that Meteorological phenomena on the south African Coast are exceptionally interesting, and having found such limited knowledge as I possess upon the subject exceedingly useful although in command of steamers, I feel naturally disappointed that Mr. Whall should consider the matter of so little importance as in a few remarks to dismiss it.

I quite agree with him that it would be "useful to a stranger when riding out a south-easter in Algoa Bay, to know that as soon as the gale is coming to an end the glass will fall," but it might have been still more useful if he had made known to the stranger the fact that the mercury begins to fall directly the typical south-easter commences; during a black south-easter only, does the atmospheric pressure not diminish, and this type of gale is of very rare occurrence.

Captain Hepworth is the author of a pamphlet published by the Meteorological Office, entitled "Weather Forecasts and Storm Warnings on the Coast of South Africa," which I recommend to the notice of Mr. Whall.

With regard to the local magnetic attraction which Captain Hepworth supposes to exist between Table Bay and Cape Point, in an experience extending over twelve years, I have been able to

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discover a marked difference between results obtained from observations in that locality and further along the coast, and I have also found that a change occurs immediately after Cape Point is left astern. I do not "consider the position of the vessel's" head having been so long on a southerly course will account for the discrepancy in compass error, even after making due allowance for error arising from retentive magnetism. It may be information to Mr. Whall to hear that the Commanders of the Union Company's Cape Mail Steamers do not wait until off Cape Point to adjust their standard compasses for the Southern Hemisphere; but it is invariably done on crossing the Magnetic Equator and verified by innumerable observations before reaching the latitude of the Cape.

In conclusion, I think Mr. Whall is too sanguine in his trust that we may soon be able to enter East London and Natal Harbours, or that the dangerous part of the coast between Hanglip and Cape L'Agulhas may soon be made safe by a good light on Dyer Island.

I hope that Mr. Whall with his aptitude for observing things upside-down (I refer to his concluding remarks), will not read this letter in an inverted manner, as he appears to have read Captain Hepworth's paper.

I have the honour to be, Sir, your obedient Servant,

EDWD. J. GRIFFIN, Lieut. R.N.R.,

Commander, Union Steamship Company.

Southampton, March 27th, 1884.

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## FOREIGN *VERSUS* ENGLISH SAILORS.

*To the Editor of the "Nautical Magazine."*

SIR,—Reading the other day a collection of yarns by Mr. Clark Russell, entitled "Round the Galley Fire"—which, by the way, in spite of some poetical exaggeration, gives some excellent glimpses of sea life—I was very much struck by one called "Waiting for a Ship." In this sketch he describes a scene at the London Shipping Office on Tower Hill, and relates a conversation he held with an English seaman, who was on the look-out for a ship, and who bitterly complained of the preference shown by English shipmasters to "Dutchmen," which in sailor's language includes

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all foreigners. Mr. Russell evidently commiserates the English sailor, and thinks that his grievance is perfectly legitimate.

He concludes his sketch with these words—"and let his demerits" (the English sailor's) "be what they will, depend upon it he is the man who should be found aboard an English ship, and that a fair specimen of him is worth as many Dutchmen as he has fingers." Now, if by a fair specimen, he means an average specimen, I must emphatically deny that the English sailor is, at the present time, in any way, even the equal, much less the superior of nearly all foreigners. If you are lucky enough to come across a really good English sailor, I will admit that he is a very good man indeed. But, alas! he is only one in fifty, the other forty-nine having neither character, capacity, strength, nor even health to recommend them.

Surely if the prejudice that British shipmasters have against their own countrymen be so wide spread, there must be a well-founded reason for it. If other things were equal, the prejudice would be in favour of the native article as against his foreign rival, with whom it is very often difficult to make your orders understood.

With an experience of more than twenty years at sea, during which time I have sailed with whole crews of Lascars, Malays, Manillamen, Italians, Chilians and Peruvians, I have most decidedly come to the conclusion that I infinitely prefer, each, and all of them, to a crew of English sailors. As compared with the foreigner, I find the Englishman more intemperate, insubordinate, and incapable. He is less able to perform any job requiring a sailor's skill, he requires constant supervision, and if left alone he will neglect his work, his only thought being to get through his watch and do as little work as possible. In stowing a cargo, he is far less strong and handy than the average foreigner, the first one to skulk and to go on deck "for a drink of water."

As officer of the watch, in a steamer, with an Englishman at the wheel, how often have I been annoyed with his inattention and careless steering. To make anything approaching a good course, he has to be "nagged" at the whole time, and one requires to keep one's nose jammed in the compass the whole watch.

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When remonstrated with for being half a point off his course, he either gives a lot of "slack," or replies that "he is doing his best," and unblushingly asserts that the ship steers very badly. You take the wheel from him to prove the contrary, and find that with the most ordinary care, the ship can be kept within a degree of her course. Your watch is one prolonged irritation in consequence, whereas with the average foreign sailor at the wheel, you look occasionally at the compass, and finding the ship always exactly on her course, you are able to turn your attention to your other duties.

The average of English sailors who can heave the lead properly, is about one in ten, and even if he can do so, he is not to be trusted in giving you the soundings. To save himself the trouble he will give you the sounding he thinks there *ought* to be. I have often been entering a port at night time, and the English leadsman, with a very melodious song, has given "by the mark seven," you feel sure that it is incorrect, and stopping the ship find there is 10 fathoms. Most foreigners are good leadsmen, and if not will very soon pick it up, while an Englishman is too proud to confess his ignorance.

Give an English sailor liberty to go on shore, he almost invariably overstays his leave, and then returns to the ship in such a state of intoxication and insubordination that he has to be put in irons and perhaps the police have to be sent for. If not quite so bad as that, you must allow him to go below for another twenty-four hours so that he may recover from his debauch. Most foreign sailors on the contrary, return at the expiration of their leave, and having spent their money in buying clothes and necessaries for the voyage, are able to resume their work the minute they step on board.

With an English crew, and your ship lying alongside a wharf, with every facility for your men getting on shore, what a pandemonium your vessel is! In a few days half your crew are in prison, and one or two of the remainder are on the sick list with incipient "horrors." You are bothered and worried almost to death by having to interview the authorities and the Consul, by having to obtain substitutes for discharging the cargo and generally getting the work of the ship accomplished.

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I think that every attention should be paid to the accommodation, the food, and the general comfort of your men. But it is proverbial that the better you treat an English sailor, the worse he behaves.

This being my experience, and it is the experience of nearly every shipmaster and mate that I have spoken to on the subject, it is not to be wondered at, that I *never* ship an Englishman if I can possibly avoid it. For my own peace and quietness, for the interests of the owners in getting the work done in the most expeditious and economical manner, for the better discipline that can be maintained, in fact for every consideration, I find it better to employ foreigners than Englishmen.

Some people say, "Ah, wait until a case of emergency occurs, then you will see who are the best men." But at those times, I have noticed the Englishman is just as quick as any one else, to disobey orders, or make a rush for the boats.

For the last fifteen years I have noticed a steady deterioration in the character of the English sailor, until at last he has become a most degraded being, with nothing to recommend him, as far as I have been able to discover. What this is due to I am unable to say, goodness knows he has been legislated enough for during the last few years, perhaps too much so, but it is a lamentable fact, and worthy the attention of the powers that be.

A scheme of compulsory certificates for able seamen, with the liability of their being suspended or cancelled for bad conduct, might perhaps do some good. A thorough sailor, with the very varied knowledge that is required of him, is as much a skilled workman as any mechanic, and should, I think, receive very much better wages than he does at present. But it would not be necessary to have the whole crew of a steamer, at any rate, composed of first-class seamen. It is a great injustice that an insubordinate, incompetent, and lazy rascal should, because he happens to possess an able seaman's discharge, receive the same wages as that "rara avis" the thoroughly competent, hardworking, willing and obedient English sailor.

It has long been received as an axiom by the public, that the British sailor is brave, skilful and obedient, and no doubt the truth

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will be unpalatable. But those who have had extensive dealings with him, will know that I am not far wrong in my estimate.

In the foregoing remarks I, of course, allude to the *majority*. As I have before said, you *occasionally* meet with a really good English sailor.

The subject being one that I feel so deeply about, must be my excuse for expatiating on it at such a length.

Yours, &c., COSMOPOLITE.

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## COMPULSORY PILOTAGE.

*To the Editor of the "Nautical Magazine."*

SIR,—I was much interested by your remarks upon compulsory pilotage in this month's magazine. While not advocating the abolition of compulsory pilotage, I would say make it all compulsory at certain ports or not at all.

In the port of Liverpool there is consistency in the compulsory pilotage. I believe I am right when I say that all vessels over 100 tons register have to take a pilot on entering or leaving the port coastwise or not, provided the captain has not passed an examination to be his own pilot. With the River Thames and its approaches the law is not so simple, the whole system seems full of absurdities. As an illustration of the eccentric character of the Thames pilotage, I beg your leave to quote from "papers on Marine Legislation," by Ernst Emil Wendt, after referring to sections 372, 373, 376, 379 and 388 of Shipping Act. The author goes on to say: "I say in *certain localities* a pilot must be employed, but it must not therefore be supposed that at any given place pilotage must either be or not compulsory. On the contrary, the two systems are frequently consistent, and if my illustrations are taken solely from the London district it must not be supposed that the evils here so patent may not be equally felt in other places."

We will now suppose a vessel on her voyage from the Mediterranean, or elsewhere in the world *south* of Boulogne, the officers to have navigated her in safety to Dungeness. Here, her officers, if she is bound to the Thames or Medway, become, in the eye of the law, suddenly incapable of taking her any farther, and must employ a licensed pilot, who is supposed to bring with him



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such consummate skill as to be able to preserve the vessel from all dangers so effectually that the Legislature has considered itself justified in transferring to him the whole charge and responsibility of the vessel and her cargo. Not so, however, if she is destined for any other port, as Hull or Newcastle, &c. In such case the master may, if he chooses, avail himself of the services of the same pilot, but he still remains the responsible person in the event of any accident happening while the pilot is in charge.

In the one case, the vessel remains within the pilotage district, and in the other passes through it. It is apparent that compulsory pilotage is not rendered necessary by dangers of navigation, and therefore justice demands that the two vessels should be treated alike, at any rate up to the point where the courses diverge.

But it may be stated that when such a point is once passed, no hardship remains, and it is therefore necessary to produce further illustrations of the Act as regards wholly unoffending parties.

I will therefore suppose that my vessel, the A., is outward bound from London and is brought to an anchor in a proper berth in Sea Reach to wait for tide. While she is lying there motionless and of course helpless two steamers are making their way up to London, one, the B., is from St. Petersburg and has taken a Trinity pilot at Orfordness, the other, C., is from Odessa and has taken a Trinity pilot at Dungeness. Near the Nore Light, some distance below where my vessel is lying, their courses converge, and from that point upwards they proceed in the same track, while their tonnage, draft of water, speed, and I may add, their power of doing mischief, are in all respects absolutely identical.

One of those steamers runs down and sinks my vessel at her anchor and my whole property is lost; will it be credited that if the steamer is B. I shall recover from her owners every farthing of my loss; if it is C. I shall recover nothing! Therefore although the pilots on board of both steamers are licensed by the same authority, although the grossest incapacity may be manifested by the one in charge of the offending vessel, and although my ship was absolutely helpless, the Legislature makes it a matter of life and death to me whether the steamer by which the damage was done cleared originally from St. Petersburg or from

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Odessa. Again I will move my vessel up the Thames and in this case she shall be inward bound, having arrived with a cargo to be discharged into lighters in the stream.

A discharging berth is pointed out by the harbour master where she is moored between buoys, and the discharge is commenced. According to the terms used on almost all marine policies, the underwriters are answerable for all damage occurring to her until she has been moored twenty-four hours in good safety; after the expiration of this period they are absolved from all further liability.

In spite of the position of good safety into which she has been ordered, she is run down and sunk by a steamer which is in charge of a pilot, and having no recourse against my underwriters I look for redress to the owners of the steamer. Is it sufficient for me to ascertain whether she was bound for a northern or southern port—say, for St. Petersburg or for Odessa as in the last illustration? By no means, for should she be bound to the former port and not on account of her destination subject to compulsory pilotage, I may be met with the statement that she carried passengers, and on that account was so subjected in order to procure exemption. On this ground it is only necessary to prove that any one person not belonging to the crew was on board, whether any fare had been paid or not; if this can be substantiated the owners are freed from all liability.

Then the author goes on to say that being foiled in attempts to obtain compensation from the owners of the wrong-doing steamer, the only chance is to proceed against the pilot, that all the original evidence required in the Court of Admiralty must be set in motion by an action at common law to recover any portion of the pilot's bond, £100. The author says the illustrations selected are not overdrawn but will be found fully exemplified by the case of the *Beta* which was taken from the High Court Admiralty to the Privy Council.

In conclusion I would say that those illustrations show that the compulsory pilotage system is wrong in detail if not in principle.

I am, Sir, yours, L. S.

Liverpool, 14th April, 1884.



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## BOOKS RECEIVED.

*Port Charges and Requirements on Vessels in the Various Ports of the World; with Tables of Moneys, Weights, and Measures of all Nations.* By Theodore Hunter and Jarvis Patten. New revised Edition, with Supplement. New York: Wiley and Son.

We had occasion to favourably notice this work on the issue of the first edition, and on carefully looking through the new and revised edition, just published, we have every reason to be satisfied with the orderly arrangement of the ports adopted by the authors, and the systematic method of grouping and condensing information of the highest value to the shipowner and shipmaster. From the vast amount of material to be collated, no subject of importance has been omitted. In connection with the various ports we find the nature of the trade, exports and imports; the depth of water on bars, in harbours, and at wharves; the description of anchorage; the rise and fall of the tide; government rules and charges; pilotage and harbour rules and charges; quarantine and sanitary rules and charges; light dues; tug-boat charges; dry docks and facilities for repairing vessels; customs and usages as to loading and unloading; lighterage; a general statement of the expenses to which a vessel is liable; a synopsis of commercial treaties; together with a reduction of the monies, weights, and measures of all nations to the English, American and French standards. These are the principal heads under which the information is given, but there is also a special treatise on stowage, together with suggestions to masters of vessels when stress of weather or damage to vessel or cargo obliges them to visit ports not contemplated in the voyage. In thus briefly stating the object and scope of the work, we feel justified in recognising it as the most complete book of reference that has yet been published in respect to Port Charges, and the transaction of ship's business in every part of the world.

*Yachting under Statute.* By R. A. B. Preston, M.A., Barrister-at-Law. London: Norie and Wilson.

The brief title of this little book is sufficiently explicit to attract

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the attention of yachtsmen, most of whom are well aware that, under certain conditions and to a certain extent, they are as much amenable to the Merchant Shipping Act as are those whose profession and calling is the British Merchant Service. The purpose of the work is "to place before yacht-owners in a popular form the exact position which they occupy on board their vessels, the advantages and privileges they enjoy, the duties and responsibilities which are incumbent upon them, and the liabilities to which they are subject." To this end the author has carefully collated and condensed the principal provisions of the maritime law applicable to pleasure yachts, and thus provided yacht-owners with a hand-book, or *aide-memoire*, of those statutory enactments immediately appertaining to them. Technicalities have been avoided as much as possible, and every part of the subject is explained in an easy and familiar manner, so that there is no difficulty in understanding the various details of the law in relation to yachts and yachting. The work aptly closes with a collection of "orders in council" relating to the rule of the road, and the navigation of the Solent, and the rivers Thames, Mersey, and Humber. A good index is also provided, whereby a special point may be ascertained and determined at once by easy reference. Altogether, the style and ordering of the work is such that it should command a ready and extensive sale. In a new edition an appropriate chapter should include the law in relation to stores.

## Our Library Table.

*Notices to Mariners* and *Hydrographic Notices* (British and Foreign) are not so abundant this month as they usually are: but many are very important. Navigators when passing the South Foreland are apprized that there are now some experimental lights being tried in the vicinity of that lighthouse; but they are totally different from the electric lights and not to be mistaken for them.

*List of the Lights in the Waters, and on the Shores and Banks of the Northern Lakes and Rivers of the United States; and also of the Canadian Lights in those Waters* corrected to January 1, 1884; the list comprises 809 notices of lights appertaining to the United

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States, and 220 in Canadian waters, arranged in geographical order; with bearings *magnetic*, and given from seaward. We can only repeat what we said in our last number, that we hope to see, at an early date, the U.S. Lighthouse Board and Coast Survey Department following in the steps of the Hydrographic Bureau, and adopting *true*, instead of magnetic bearings.

The books, pamphlets, and papers on our table are as follow:— *The Science Monthly* (London: D. Bogue), for April, with its usual fund of practical science. *Van Nostrand's Engineering Magazine* (New York), for April, though containing nothing of special note for seamen, has much to say on various departments of engineering. *Forest and Stream* (New York), for April 3rd, will interest yachtsmen by its observations on "the value of weight for speed in light airs and breezes;" it also gives a sketch and plan of the *Gleam*, a centre-board yacht, considerably advanced beyond the orthodox trap; and continues its papers (the 12th) on "Amateur Canoe Building." The *Scientific American* (New York), for March, is essential to all whose tastes lie in the direction of science and manufactures; but it never forgets that a large majority of the reading public, if not appreciating science at its full value, nevertheless likes to be posted up to date on the subject, so as not to be entirely shut out in a general conversation. *Revue Maritime et Coloniale* (Paris), for April, concludes its remarks on Madagascar, and gives a paper (by Lieut. E. Perrin) on the "determination of a ship's position by equal circumzenith altitudes." *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft III., has much to say on several meteorological points; with a paper on Chronometer rates. *Mittheilungen aus dem Gebeite des Seewesens* (Pola), No. III., though less important than usual, keeps up its supply of current subjects. *Revista della Marina* Mercantile (Trieste), for April, continues its observations on the recent progress of nautical science and its application to practical navigation, and gives a paper on Sumner's graphic method.

We have also to hand the latest numbers of *Hansa*, *Das Schiff*, *Le Yacht*, *L'Avenir Militaire*, the *New York Maritime Register*, the *Nautical Gazette* (U.S.), and the *San Pedro Shipping Gazette*.

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We must not omit to mention the *Ocean Chronicle*, a paper of four pages, published by E. P. Nichols, at sea, on board the ship *Frank Pendleton*, and bearing date Feb. 26, 1884. It appears to be No. 9 of a series with which the captain amuses himself during his voyages. The copy before us was written, set up in type, and printed on board; and gives the details of the voyage, with now and then an anecdote, or a short dissertation as for instance, "Does the moon influence the weather?" We commend Mr. E. P. Nichol's industry and intelligence, and hope others will follow in his wake.

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## SHIPBUILDING, 1884.

IRON AND STEEL STEAMERS BUILT IN THE UNITED KINGDOM AND REGISTERED AS NEW BRITISH SHIPS.

| Ports where built. | No. first three months. | Gross tonnage first three months. | No. corresponding period last year. | Gross tonnage corresponding period last year. |
|---|---|---|---|---|
| Clyde Ports | 27 | 41,563 | 30 | 45,472 |
| Tyne Ports | 28 | 38,777 | 23 | 41,216 |
| Sunderland | 27 | 45,222 | 25 | 43,733 |
| The Hartlepools | 6 | 9,415 | 8 | 14,033 |
| Middlesbro' | 5 | 9,761 | 3 | 5,036 |
| Stockton | 2 | 5,587 | 3 | 6,897 |
| Whitby | 2 | 3,175 | 2 | 3,560 |
| Hull | 8 | 9,099 | 6 | 6,561 |
| London | 2 | 116 | 5 | 3,369 |
| Southampton | 2 | 3,742 | 3 | 3,880 |
| Liverpool | 1 | 662 | 1 | 245 |
| Barrow | 5 | 10,181 | 1 | 2,145 |
| Belfast | 3 | 4,904 | 4 | 5,666 |
| Cumberland Ports | 2 | 1,780 | 2 | 1,636 |
| Aberdeen | 2 | 1,712 | 3 | 3,740 |
| Dundee | 2 | 2,361 | 4 | 5,171 |
| Grangemouth | 1 | 1,161 | 2 | 1,416 |
| Leith | 1 | 966 | 3 | 2,836 |
| Other Ports | 10 | 2,807 | 13 | 5,373 |
| Total | 136 | 192,993 | 141 | 202,075 |

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## Steel Steamers Built in the United Kingdom and Registered as British Ships.

| Ports where built. | No. First three months | Gross Tonnage first three months. | No. corresponding period last year. | Gross Tonnage corresponding period last year |
|---|---|---|---|---|
| Clyde Ports | 8 | 16,521 | 13 | 20,616 |
| Liverpool | 1 | 662 | — | — |
| Dundee | 1 | 1,403 | 2 | 4,369 |
| Sunderland | 1 | 1,774 | — | — |
| Cumberland Ports | 1 | 267 | — | — |
| Leith | — | — | 1 | 1,304 |
| Hull | 1 | 1,884 | 1 | 1,711 |
| Barrow | 1 | 1,191 | — | — |
| Grangemouth | 1 | 1,161 | 1 | 1,119 |
| London | 1 | 37 | — | — |
| Belfast | — | — | 1 | 4,573 |
| Kirkaldy | — | — | 1 | 1,864 |
| Total | 16 | 24,850 | 20 | 35,806 |

## Iron and Steel Sailing Ships Built in the United Kingdom, and Registered as British Ships.

| Ports where built. | No. first three months. | Gross Tonnage first three months. | No. Corresponding period last year. | Gross Tonnage Corresponding period last year. |
|---|---|---|---|---|
| Clyde Ports | 6 | 11,388 | 9 | 15,688 |
| Belfast | 1 | 2,365 | 1 | 4,753 |
| Southampton | 2 | 4,645 | 1 | 2,093 |
| Stockton | 1 | 1,745 | — | — |
| Liverpool | 2 | 4,525 | 3 | 4,728 |
| Dundee | — | — | 2 | 3,021 |
| Sunderland | — | — | 2 | 3,161 |
| Cumberland Ports | — | — | 1 | 1,839 |
| Leith | — | — | 1 | 1,681 |
| Bristol | 1 | 974 | — | — |
| | 13 | 25,642 | 19 | 32,211 |

Of these vessels the one built at Belfast was the only one built of steel.

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# TIDE TABLES FOR MAY, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | LONDON BRIDGE. | | HULL. | | NORTH SHIELDS | | LEITH. | | DEVONPORT. | | DOVER. | | WESTON-SUPER-MARE. | | LIVERPOOL. | | GREENOCK. | | QUEENSTOWN | | KINGSTOWN. | | LONDONDERRY. | | BREST. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| Th | 1 | 5 56 | 6 23 | 10 39 | 11 11 | 7 37 | 8 9 | 6 34 | 7 5 | 9 45 | 10 10 | 8 12 | 8 39 | 10 47 | 11 12 | 3 6 | 8 34 | 3 55 | 4 22 | 9 11 | 9 38 | 3 5 | 3 35 | — | 0 31 | 8 0 | 8 30 |
| F | 2 | 6 58 | 7 23 | 11 47 | — | 8 44 | 9 21 | 7 38 | 8 15 | 10 39 | 11 10 | 4 7 | 4 36 | 11 42 | — | 4 5 | 4 39 | 4 51 | 5 22 | 10 7 | 10 41 | 4 8 | 4 44 | 1 12 | 1 56 | 9 2 | 9 37 |
| S | 3 | 7 57 | 8 32 | 0 24 | 1 0 | 10 0 | 10 39 | 8 53 | 9 32 | 11 45 | — | 5 6 | 5 39 | 0 16 | 0 53 | 5 17 | 5 59 | 5 56 | 6 33 | 11 19 | 11 57 | 5 21 | 5 57 | 2 38 | 3 16 | 10 16 | 10 55 |
| S | 4 | 9 11 | 9 50 | 1 36 | 2 11 | 11 15 | 11 49 | 10 9 | 10 43 | 0 24 | 1 8 | 6 18 | 6 48 | 1 31 | 2 8 | 6 39 | 7 16 | 7 11 | 7 47 | — | 0 33 | 6 31 | 7 8 | 3 49 | 4 18 | 11 34 | — |
| M | 5 | 10 26 | 10 59 | 2 43 | 3 14 | — | 0 20 | 11 13 | 11 40 | 1 40 | 2 15 | 7 22 | 7 53 | 2 48 | 3 17 | 7 49 | 8 18 | 8 21 | 8 51 | 1 7 | 1 39 | 7 34 | 8 3 | 4 41 | 5 6 | 0 8 | 0 38 |
| Tu | 6 | 11 31 | 11 59 | 3 43 | 4 9 | 0 47 | 1 11 | — | 0 5 | 2 46 | 3 13 | 8 21 | 8 46 | 3 49 | 4 19 | 8 43 | 9 6 | 9 18 | 9 43 | 2 9 | 2 36 | 8 30 | 8 56 | 5 27 | 5 48 | 1 5 | 1 30 |
| W | 7 | — | 0 24 | 4 33 | 4 55 | 1 33 | 1 54 | 0 28 | 0 49 | 3 37 | 4 1 | 9 10 | 9 32 | 4 47 | 5 12 | 9 28 | 9 48 | 10 7 | 10 29 | 3 1 | 3 23 | 9 20 | 9 42 | 6 9 | 6 29 | 1 53 | 2 14 |
| Th | 8 | 0 45 | 1 5 | 5 16 | 5 34 | 2 14 | 2 33 | 1 9 | 1 28 | 4 24 | 4 45 | 9 58 | 10 13 | 5 34 | 5 55 | 10 7 | 10 25 | 10 50 | 11 10 | 3 44 | 4 4 | 10 1 | 10 18 | 6 48 | 7 7 | 2 33 | 2 51 |
| F | 9 | 1 26 | 1 43 | 5 55 | 6 12 | 2 51 | 3 8 | 1 46 | 2 4 | 5 4 | 5 21 | 10 32 | 10 51 | 6 15 | 6 34 | 10 43 | 11 1 | 11 30 | 11 49 | 4 23 | 4 41 | 10 3. | 10 52 | 7 26 | 7 44 | 3 9 | 3 27 |
| S | 10 | 2 2 | 2 18 | 6 30 | 6 47 | 3 24 | 3 40 | 2 21 | 2 38 | 5 38 | 5 55 | 11 10 | 11 29 | 6 53 | 7 11 | 11 19 | 11 36 | — | 0 7 | 4 59 | 5 17 | 11 5 | 11 24 | 8 1 | 8 17 | 3 44 | 4 1 |
| S | 11 | 2 35 | 2 51 | 7 4 | 7 21 | 3 56 | 4 13 | 2 54 | 3 9 | 6 12 | 6 29 | 11 47 | — | 7 25 | 7 44 | 11 55 | — | 0 24 | 0 41 | 5 34 | 5 51 | 11 40 | 11 57 | 8 32 | 8 47 | 4 18 | 4 34 |
| M | 12 | 3 8 | 3 23 | 7 38 | 7 55 | 4 30 | 4 47 | 3 24 | 3 40 | 6 45 | 6 59 | 0 [illegible] | 0 28 | 8 0 | 8 16 | 0 10 | 0 27 | 0 58 | 1 15 | 6 8 | 6 24 | — | 0 14 | 9 2 | 9 17 | 4 50 | 5 6 |
| Tu | 13 | 3 41 | 3 58 | 8 11 | 8 27 | 5 4 | 5 21 | 3 57 | 4 15 | 7 18 | 7 27 | 0 41 | 1 0 | 8 32 | 8 47 | 0 44 | 1 0 | 1 32 | 1 49 | 6 41 | 6 58 | 0 31 | 0 49 | 9 32 | 9 48 | 5 22 | 5 39 |
| W | 14 | 4 15 | 4 31 | 8 44 | 9 2 | 5 39 | 5 57 | 4 33 | 4 51 | 7 48 | 8 0 | 1 19 | 1 38 | 9 8 | 9 20 | 1 16 | 1 33 | 2 6 | 2 23 | 7 16 | 7 31 | 1 7 | 1 26 | 10 5 | 10 24 | 5 56 | 6 15 |
| Th | 15 | 4 49 | 5 5 | 9 21 | 9 41 | 6 16 | 6 36 | 5 10 | 5 31 | 8 17 | 8 34 | 1 57 | 2 17 | 9 3. | 9 54 | 1 51 | 2 10 | 2 41 | 3 0 | 7 53 | 8 12 | 1 46 | 2 7 | 10 45 | 11 9 | 6 35 | 6 56 |
| F | 16 | 5 24 | 5 45 | 10 2 | 10 25 | 6 58 | 7 22 | 5 54 | 6 18 | 8 5. | 9 15 | 2 38 | 3 0 | 10 12 | 10 32 | 2 30 | 2 54 | 3 20 | 3 42 | 8 32 | 8 54 | 2 29 | 2 52 | 11 37 | — | 7 19 | 7 43 |
| S | 17 | 6 8 | 6 33 | 10 52 | 11 23 | 7 49 | 8 19 | 6 44 | 7 14 | 9 38 | 10 4 | 3 23 | 3 47 | 10 54 | 11 19 | 3 16 | 3 42 | 4 5 | 4 30 | 9 18 | 9 44 | 3 17 | 3 45 | 0 9 | 0 45 | 8 9 | 8 37 |
| S | 18 | 6 59 | 7 29 | 11 56 | — | 8 52 | 9 27 | 7 47 | 8 22 | 10 33 | 11 5 | 4 13 | 4 40 | 11 47 | — | 4 12 | 4 45 | 4 58 | 5 28 | 10 12 | 10 44 | 4 17 | 4 50 | 1 23 | 2 3 | 9 7 | 9 40 |
| M | 19 | 8 0 | 8 36 | 0 30 | 1 3 | 10 3 | 10 39 | 8 58 | 9 34 | 11 42 | — | 5 8 | 5 38 | 0 19 | 0 53 | 5 21 | 5 59 | 6 0 | 6 34 | 11 18 | 11 52 | 5 23 | 5 56 | 2 41 | 3 16 | 10 16 | 10 52 |
| Tu | 20 | 9 11 | 9 47 | 1 36 | 2 7 | 11 12 | 11 48 | 10 7 | 10 37 | 0 22 | 1 3 | 6 9 | 6 41 | 1 27 | 2 1 | 6 36 | 7 10 | 7 9 | 7 42 | — | 0 26 | 6 27 | 6 57 | 3 46 | 4 12 | 11 28 | — |
| W | 21 | 10 19 | 10 54 | 2 37 | 3 6 | — | 0 12 | 11 5 | 11 32 | 1 41 | 2 16 | 7 14 | 7 45 | 2 35 | 3 10 | 7 41 | 8 10 | 8 13 | 8 43 | 0 59 | 1 32 | 7 2. | 7 55 | 4 36 | 4 58 | 0 2 | 0 32 |
| Th | 22 | 11 24 | 11 54 | 3 35 | 4 3 | 0 38 | 1 4 | 11 58 | — | 2 49 | 3 19 | 8 15 | 8 43 | 3 44 | 4 17 | 8 37 | 9 3 | 9 12 | 9 40 | 2 4 | 2 34 | 8 24 | 8 53 | 5 20 | 5 43 | 1 0 | 1 27 |
| F | 23 | — | 0 20 | 4 30 | 4 56 | 1 29 | 1 54 | 0 24 | 0 50 | 3 47 | 4 14 | 9 11 | 9 39 | 4 49 | 5 19 | 9 25 | 9 53 | 10 8 | 10 36 | 3 2 | 3 30 | 9 21 | 9 47 | 6 8 | 6 34 | 1 53 | 2 19 |
| S | 24 | 0 44 | 1 10 | 5 22 | 5 48 | 2 18 | 2 42 | 1 15 | 1 40 | 4 40 | 5 5 | 10 7 | 10 34 | 5 48 | 6 16 | 10 18 | 10 43 | 11 8 | 11 30 | 3 57 | 4 24 | 10 11 | 10 35 | 7 0 | 7 26 | 2 45 | 3 10 |
| S | 25 | 1 35 | 2 0 | 6 13 | 6 38 | 3 6 | 3 30 | 2 5 | 2 29 | 5 30 | 5 55 | 11 1 | 11 28 | 6 44 | 7 11 | 11 9 | 11 35 | 11 57 | — | 4 50 | 5 16 | 10 59 | 11 23 | 7 52 | 8 16 | 3 35 | 4 0 |
| M | 26 | 2 25 | 2 49 | 7 3 | 7 28 | 3 54 | 4 19 | 2 53 | 3 16 | 6 20 | 6 45 | 11 55 | — | 7 35 | 7 59 | — | noon | 0 24 | 0 50 | 5 42 | 6 7 | 11 48 | — | 8 38 | 9 0 | 4 24 | 4 48 |
| Tu | 27 | 3 13 | 3 39 | 7 52 | 8 16 | 4 44 | 5 9 | 3 40 | 4 4 | 7 8 | 7 31 | 0 22 | 0 49 | 8 22 | 8 45 | 0 25 | 0 49 | 1 15 | 1 39 | 6 31 | 6 55 | 0 13 | 0 38 | 9 23 | 9 46 | 5 12 | 5 36 |
| W | 28 | 4 5 | 4 29 | 8 41 | 9 6 | 5 35 | 6 1 | 4 29 | 4 55 | 7 54 | 8 17 | 1 15 | 1 41 | 9 8 | 9 31 | 1 13 | 1 37 | 2 3 | 2 27 | 7 19 | 7 43 | 1 4 | 1 30 | 10 10 | 10 35 | 6 0 | 6 25 |
| Th | 29 | 4 54 | 5 17 | 9 31 | 9 57 | 6 27 | 6 53 | 5 21 | 5 49 | 8 45 | 9 3 | 2 7 | 2 33 | 9 53 | 10 15 | 2 2 | 2 27 | 2 51 | 3 16 | 8 7 | 8 31 | 1 56 | 2 28 | 11 2 | 11 33 | 6 51 | 7 17 |
| F | 30 | 5 42 | 6 9 | 10 23 | 10 51 | 7 20 | 7 49 | 6 17 | 6 46 | 9 26 | 9 49 | 2 58 | 3 24 | 10 37 | 10 59 | 2 52 | 3 18 | 3 41 | 4 6 | 8 56 | 9 21 | 2 50 | 3 18 | — | 0 8 | 7 43 | 8 10 |
| S | 31 | 6 35 | 7 2 | 11 22 | 11 57 | 8 20 | 8 53 | 7 16 | 7 48 | 10 12 | 10 37 | 3 50 | 4 16 | 11 22 | 11 48 | 3 44 | 4 13 | 4 32 | 5 0 | 9 47 | 10 13 | 3 48 | 4 19 | 0 45 | 1 24 | 8 39 | 9 8 |



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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* — *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −3 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 13 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 3 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 22 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbellton | −0 23 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 3 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 3 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 53 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 53 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 28 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 3 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 43 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 13 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 13 | Devonport |
| Peterhead | −1 43 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 38 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 8 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 53 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 23 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 22 | N. Shields |
| Whitehaven | −0 0 | Liverpool |
| Wick | −2 56 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 43 | London |
| Youghall | +0 13 | Queenstown |

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## MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 156 | England—South Coast—Needles Channel | Alteration in buoyage. |
| 157 | „ S.E. Coast—South Foreland | Experimental lights. |
| 158 | „ Thames Entrance—Alexandra Channel | Alteration of buoyage. |
| 159 | „ East Coast—Tynemouth Light | Re-adjustment of apparatus. |
| 160 | Ireland—East Coast—Ballygerry Bay—Rosslare | New leading lights. |
| 161 | „ „ Belfast Lough Entrance | Alteration in lights in October next. |
| 162 | Baltic—Sweden—Carlskrona Harbour | Prohibited anchorage near cable. |
| 163 | „ „ Kalmar Sund—Grimskär | Re-exhibition of permanent lights. |
| 164 | France—West Coast—Rade du Croisic—La Turbal | New leading lights. |
| 165 | Mediterranean—Spain—Malaga | New light on breakwater. |
| 166 | „ Algeria—Bona | Depth of water. |
| 167 | „ Sicily—Cape Zaffarano | New light. |
| 168 | „ Cyprus—Famagousta Harbour | Buoy with cage replaced at entrance. |
| 169 | „ Turkey—Smyrna | An unsafe channel. |
| 170 | North Atlantic—Cape Verde Islands—St. Vincent Island—Porto Grande | Semaphore on Bird Island. |
| 171 | Eastern Archipelago—Sumatra—West Coast—Pulo Bodjo | Intended new light. |
| 172 | „ Sunda Strait—Java—Fourth Point | Intended permanent light. |
| 173 | „ Java—North Coast—Hoorn Island | Shoal near the island. |
| 174 | China—East Coast—Yang-tse-Kiang Entrance | Light-vessel and buoys altered in position. |
| 175 | South Australia—Spencer Gulf—Port Broughton—Mandora Channel | New buoys in channel |
| 176 | United States—North Carolina—Cape Hatteras | New buoy lighted by gas. |
| 177 | „ Virginia—Cape Charles | New buoy lighted by gas. |
| 178 | „ New Jersey—N.E. end of 5-fathom Bank | Temporary change of light-vessel. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

**156.—England.**—*South Coast.—Needles Channel, Isle of Wight. —Alteration in Buoyage.*—In consequence of the Shingles sand having grown out to the southward, the S.W. Shingles buoy has been replaced in its former position, and now lies in 7 fathoms at low

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water spring tides, with the following marks and compass bearings, viz. :—Hurst high lighthouse, open its breadth to the northward of the low lighthouse, N.E. by E. ¼ E.; Nodes beacon, in line with the western end of variegated cliff in Alum bay, E. by S. ¼ S.; Sun Corner cliff, open to the southward of Needles lighthouse, S.E. by E. ¼ E., distant $\frac{3}{10}$ths of a mile.

157.—ENGLAND. — *S.E. Coast. — South Foreland.—Experimental Lights.*—With reference to Notice 46, p. 155, on intended exhibition of experimental lights at the South Foreland, in addition to the existing electric lights ;—further Notice has been given that, after 3rd April, 1884, the exhibition of the experimental lights would be commenced ; and they will be visible at irregular periods, probably every night (except Sunday) during the ensuing six months. These lights are shown from three temporary wooden towers, respectively marked A, B, and C, 180 feet apart, placed in a line bearing N.W. from South Foreland high lighthouse, the distance between the high light and the first experimental light (A) being 245 feet; consequently the permanent high and low lights are to seaward of the experimental lights. The electric lights from the high and low lighthouses are not in any way changed or interfered with. The centre of each experimental light is about 15 feet below that of the permanent high light. The experimental lights necessarily have varying characteristics which cannot be stated definitely. The full strength of the experimental lights is visible northward of the South Foreland from the bearing of W.S.W. to the land; and to the south-westward from the bearing N.E. by N. in towards the land; but doubtless a considerable amount of reflected light will be visible outside these limits. *Variation*, 17¼° *W.*

158.—ENGLAND.—*Entrance to the Thames.—Alexandra Channel. —Alteration of Buoyage.*—In accordance with Notice 85, p. 231, the buoyage in the Alexandra channel has been altered in the following manner, viz. :—A *spherical* buoy, painted in red and white horizontal bands and surmounted by staff and triangle, has been substituted for the N.W. Shingles buoy; and the West Shingles, Shingles Elbow, S.W. Shingles, and South Shingles buoys, have been altered from red can to red conical buoys.

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159.—ENGLAND.—*East Coat.—Tynemouth Light.*—Some misapprehension having arisen as to the effect of a recent re-adjustment of apparatus in the Tynemouth light, notice is given, that formerly, owing to the difficulty of cutting off the light of a revolving catoptric apparatus sharply on a given bearing, the power of the beam was impaired over a considerable section of its arc to the northward; but recently the apparatus has been so adjusted as to show the full power of the light over the advertised arc, and thus it has occurred that a faint light is now visible into the land.

160.—IRELAND.—*East Coast.—Ballygerry or Wexford South Bay.—Leading lights near Rosslare.*—With reference to Notice in 1883, on the intended exhibition of leading lights near Rosslare, in consequence of the extension of the pier on the southern side of Ballygerry or Wexford south bay; on or about 1st May, 1884, the following lights will be exhibited:—

*Pier Head Light.*—This light will show a *fixed green* light between the bearings of N. 57° W, (leading northward of Cawmeens or Calmines), and S. 44° W. (passing westward of Long bank and Holdens bed), and *fixed red* from S. 44° W., through east, to N. 44° E., indicating the entrance to the harbour from the northward. It will be elevated 27 feet above high water, and should be visible from a distance of about 6 miles.

*Western Light.*—The western light, shown from a window of a dwelling situated on the cliff, and bearing N. 64° W., distant $1\frac{3}{10}$ths. mile from the pier head light, will be a *fixed green* light, visible between the bearings of S. 47° W. (leading eastward of the Dogger bank), through west, and N. 22° E. It will be elevated 47 feet above high water, and should be seen from a distance of about 8 miles.

These leading lights kept in line bearing N.W. by W. $\frac{3}{4}$ W. will lead in mid-channel through South Shear. Vessels approaching from seaward should keep the lights in line, until abreast of Cawmeens buoy, after passing which on the port-hand, the western or cliff light should be kept well open northward of the pier-head light. The North Shear will also be well defined between Long and Dogger banks, by keeping in the *red* sector of the outer or pier light, and in the *green* sector of the western or cliff light. *Variation*, $21\frac{1}{2}$° *W.*

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161.—IRELAND.—*East Coast.—Belfast Lough Entrance.—Intended Group Flashing Light and Fog-Signal on Mew Island; also, Discontinuance of Copeland Light and Fog-Signal.*—On or about 1st October, 1884, a light will be exhibited from a lighthouse erected on Mew island, south side of entrance to Belfast lough; it will be a *flashing white* light, showing a *group of four flashes* at intervals of *sixty seconds*. The lighthouse is situated east from Copeland lighthouse, distant 4 cables. Position, lat. 54° 41′ 55″ N., long. 5° 30′ 40″ W. Also, a fog-signal will be established on Mew island; it will be a siren, which, during thick or foggy weather, will give *two blasts* in quick succession at intervals of *sixty seconds*. Also, on the exhibition of Mew island light, the light and fog-signal on Copeland (lighthouse or little Copeland) island will be discontinued. *Variation*, 21¾° *W*. Further Notice will be given concerning this light about the time of its being exhibited.

162. — BALTIC. — *Sweden.—Carlskrona Harbour Prohibited Anchorage near Telegraph Cable.*—A telegraph cable has been laid from a position on the eastern side of East Kruthusholm (Kings holm, in communication by cable with Carlskrona), to a position on the western side of Basareholm, Carlskrona harbour. The shore ends of both cables are marked by poles, about 20 feet high, and surmounted by a red cross, under which there is a large white notice, with *Telegraf-Kabel* in black letters on it. Mariners are cautioned not to anchor in the vicinity.

163.—BALTIC. — *Sweden. — Kalmar Sund. — Grimskär.—Re-exhibition of Permanent Lights.*—With reference to Notice 92, p. 234, on discontinuance of the permanent lights at Grimskär, and exhibition of a provisional light, pending rebuilding the lighthouse, the permanent lights are now re-exhibited:—The upper light shows a *single red flash* between the bearings of N. 49° E. and N. 31° E.; a *fixed white* light from N. 31° E. to N. 19° E.; and a *double white flash* from N. 19° E. to N. 1° E.; elevated 55 feet above the sea, and visible from a distance of about 13 miles. The lower light shows a *double white flash* between the bearings of S. 32½° W. and S. 36½° W.; a *fixed white* light from S. 36½° W. to S. 38° W.; a *single red flash* from S. 38° W. to S. 48° W.; and a *fixed red* light from S. 48° W. to S. 58° W.; elevated 45 feet above the

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sea, and visible—the white light from a distance of about 12 miles, the red light from about 8 miles. These lights are obscured in all directions other than above given; but the lower light may be faintly visible through a window on the east side of the light-house, when near it. The lighthouse will shortly be painted white. The small leading light on the N.E. point of Grimskär, which serves as a guide to Kalmar road, is not altered; but shows as heretofore—a *red* light between the bearings of S 60° W. and S. 80° W., and a *white* light to the northward and southward. *Variation*, 8° *W.*

164.—FRANCE.—*West Coast.—Rade du Croisic.—Leading Lights at La Turbal.*—On 15th April, 1884, an additional light would be exhibited from iron supports with shed at La Turbal (Turballe); which, kept in line bearing E.N.E. with the light now shown—the position of which will be slightly altered—will lead into that harbour:—The present or high light (*fixed white*) when altered in position, will be elevated 33 feet above high water (20 feet above the ground). Position, lat. 47° 20′ 50″ N., long. 2° 30′ 50″ W. The new or low light will be a *fixed white* light, elevated 24 feet above high water (22 feet above the ground), and will bear W.S.W. from the high light, distant 40 yards. Both these lights should be visible from a distance of about 7 miles. *Variation*, 18¼° *W.*

165.—MEDITERRANEAN.—*Spain.—Malaga.—Light on Breakwater.*—A light is now exhibited from the emerged extremity of the breakwater in course of construction at Malaga; it is a *fixed green* light, elevated 20 feet above high water, and situated at a distance of 3[illegible] om Malaga principal lighthouse.

166.—[illegible]AN.—*Algeria.—Bona.—Depth of Water.*—[illegible]port [illegible]na) is filling up with sand, and is no longer [illegible]sible [illegible]ore than 21 feet draught.

167.—[illegible]—*Sicily.—Light on Cape Zaffarano.*—A *red* li[illegible]ed on cape Zaffarano, east side of the of Pal[illegible]t above the sea (36 feet above the [illegible]und); [illegible]ver an arc of 223° between the [illegible]rings o[illegible]W. The tower is octagonal, the [illegible]and painted white. Position, 38° 6[illegible] *Variation*, 10½° *W.*

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168.—MEDITERRANEAN. — *Cyprus.* — *Famagousta Harbour.*—*Cage Replaced on Buoy at Entrance.*—With reference to Notice 100, p. 236, on the buoy marking the northern end of the reefs and shoal ground at the entrance to Famagousta harbour, having been replaced in position (after having broken adrift); but that the cage previously surmounting the buoy had been destroyed; a staff, 6 feet long, surmounted by an iron cage painted black has been placed upon the buoy.

169.—MEDITERRANEAN. — *Turkey.* — *Smyrna.* — In the south channel, between the breakwater and the custom-house mole, the depth varies from 23 to 26 feet, according to the tide. This entrance is not guaranteed to be safe, and vessels using it do so at their own risk.

170.—NORTH ATLANTIC.—*Cape Verde Islands.*—*St. Vincent Island.*—*Porto Grande.*—*Semaphore Station on Bird Island.*—A semaphore station, from which messages will be transmitted to an agent of Lloyd's has been established on Bird (Passaros or Jow) island, entrance to Porto Grande, St. Vincent. Passing vessels should communicate by the Commercial Code of Signals.

171. — EASTERN ARCHIPELAGO. — *Sumatra.* — *West Coast.* — *Intended light on Pulo Bodjo.*—Shown from a lighthouse erected on Pulo Bodjo, northern side of Siberoet (Sibero) strait, west coast of Sumatra. The light will probably be a *flashing white* light, showing *two flashes* in quick succession *every half-minute*, in the following order:—Flash of *three and a-half seconds'* duration; eclipse, *four* seconds; flash of *three and a-half seconds*, followed by an eclipse of *nineteen seconds*. Elevated 279 feet above high water. Position, lat. 0° 37½′ S., long., 98° 30¼′ E.

172.—EASTERN ARCHIPELAGO.—*Sunda Strait.*—*Java.*—*Fourth Point.*—*Intended Permanent Light, and Discontinuance of Provisional Light.*—With reference to Notice in 1883, on the exhibition of a provisional light on Fourth point (Tanjong Tiikoening), Java;—further notice has been given, dated 15th March 1884, of the intended re-exhibition of a permanent light from a lighthouse to be erected on Fourth point, in place of that destroyed during the eruption of Krakatoa, on 27th August, 1883. It will be a *fixed white* light, visible from a distance of 18 miles. Position, lat.

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6° 4′ 20″ S., long. 105° 52′ 50″ E. Also, on the exhibition of the permanent light, the provisional light now shown will be discontinued.

173.—Eastern Archipelago.—*Java.—North Coast.—Shoal W.N.W. of Hoorn Island.*—Lying about 3 miles W.N.W. of Hoorn island, Thousand islands, north coast of Java; this shoal (*Besse shoal*), on which the American barque *W. H. Besse* struck and remained for one tide is stated to be of small extent, with 11 feet least water on it; and lies with the following bearings:—N.W. point of Hoorn island, E. by S. ¾ S.; S.E. extreme of Babie island, W. by S. ¾ S. Position approximate, lat. 5° 46½′ S., long. 106° 25′ E. *Variation*, 2° *E.*

174.—China.—*East Coast.—Yang-tse-Kiang Entrance.—Kiu Toan Light-Vessel, and Block House Shoal Buoy.—Alteration in Positions.*—With reference to Notice 112, p. 240, on shoal ground having been formed in South channel, Yang-tse-Kiang, about 5 cables westward of Block House shoal; on or about 1st March, 1884, consequent on the formation of this shoal ground, the following alteration would be made in the positions of Kiu Toan light-vessel and Block House shoal buoy. Kiu Toan light-vessel is now moored about $2\frac{1}{10}$th miles eastward of Kiu Toan beacon, and marks the north-eastern side of the seaward entrance to the channel between the newly-formed shoal ground and the south bank of the river. Block House shoal buoy has been moved about 6 cables W.S.W. from its previous position, and now marks the south-western edge of the newly formed shoal ground. *Variation*, 2¼° *W.*

175.—South Australia.—*Spencer Gulf.—Port Broughton.—Mundoora Channel.*—The Mundoora channel, leading to port Broughton, is now marked in the following manner, viz.:—One perch buoy (at the entrance), 13 tub-shaped buoys, 19 cask buoys, and 5 pile beacons, all painted red, to be left on the starboard-hand going in. On the port-hand, 1 perch buoy (at the entrance), and 3 pile beacons, all painted black. The Mundoora channel is only fit for the smallest class of coasters.

176.—United States.—*North Carolina.—Cape Hatteras.—Gas Buoy.*—On or about 1st April, 1883, a lighted gas buoy would be moored off cape Hatteras. The approximate position is as



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follows:—Lat. 35° 5′ 5″ N., long. 75° 23′ 15″ W. Bearings and distances of prominent objects are as follows:—Cape Hatteras lighthouse, N.N.W. $\frac{5}{8}$ W., 12 miles; cape Hatteras beacon light, N.N.W. $\frac{7}{8}$ W., 11¼ miles.

177.—United States.—*Virginia.—Cape Charles.—Gas Buoy.*—On or about April 1, 1884, a lighted gas buoy would be moored off cape Charles. The approximate position is as follows:—Lat. 36° 59′ 28″ N.; long. 75° 42′ 57″ W. Bearings and distances of prominent objects are as follows:—Cape Charles lighthouse, N.W., 11½ miles; cape Henry lighthouse, W.S.W. $\frac{7}{8}$ W., 14½ miles.

178.—United States.—*New Jersey.—Temporary Change of Light-Vessel off N.E. End of Five-Fathom Bank.*—On or about May 10, 1884, the light-ship moored on five-fathom bank, N.E. end, New Jersey, will be removed for repairs, and relief lightship No. 24 will be placed on this station. Lightship No. 24 is schooner-rigged, painted red, with the word *Relief* in large white letters on each side, and "No. 24" on the stern, and has a hoop-iron cage day-mark at each mast-head. *The* fog-signal, *while No. 24 is on this station*, will be a bell and horn, *instead of a steam-whistle*. The usual lightship will be replaced as soon as the repairs are completed.

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Oil on the Waters.—In an inquiry recently held at Hull into the circumstances attending the deaths of two seamen belonging to the Fishing smack *Socrates*, who were drowned during the gale of the 27th January last, some interesting particulars were elicited respecting the effect produced upon the surface of the sea by oil which was accidentally pumped overboard. One of the crew in giving his evidence at the inquiry, stated that the sea ran very heavily all day, and that about noon it burst over the vessel, washing the skipper and an apprentice overboard, and breaking the mast and tiller. Soon afterwards two casks of livers stowed below were accidentally stove in and the oil subsequently came up in the pumps. From that time the sea became calm round the vessel, and no more water was shipped. He further stated that they had previously tried the effect of pouring overboard about a gallon of linseed oil, but without producing any very marked result.

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## OUR OFFICIAL LOG.

OFFICIAL RETURN OF BRITISH WRECKS IN MARCH, 1884.—The number and tonnage of British vessels, respecting whose loss reports were received at the Board of Trade during the month of March, 1884, and the number of lives lost, are as follow :—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing..... | 85 | 17,199 | 135 |
| Steam ..... | 15 | 6,915 | 36 |
| Total..... | 100 | 24,114 | 171 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in March relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—THOMAS GRAY, Assistant-Secretary, Marine Department.—Board of Trade, 1st April, 1884.

THE Board of Trade have awarded a piece of plate to Captain A. K. Saliaris, of the Greek steamship *Nicholas Viagliano*, of Cephalonia, in acknowledgment of his humanity and kindness to a portion of the crew of the ship *Simla*, of Glasgow, whom he rescued from their sinking vessel on the 26th January last and conveyed to Dunkirk.

THE Board of Trade have awarded their silver medal to Mr. R. Firman, master of the steamship *Whitehall*, of London, in recognition of his humanity in standing by the barque *Moel Rhiwan*, of Carnarvon, which was in a sinking state, and sending a small boat in a heavy sea to the rescue of the shipwrecked crew. The Board have also awarded their Bronze Medal to the two men who manned the boat, in acknowledgment of their gallant conduct.



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THE Board of Trade have awarded a piece of plate to Captain Thomas J. Greenbank, master of the American ship *Martha Cobb*, of Rockland, U.S.A., in acknowledgment of his humanity in standing by the British barque *Grecian*, of Dundee, which was in a sinking condition for several hours in a heavy sea and finally rescuing the crew. The Board have also awarded a Gold Medal to Mr. Dominick Gardiner, the second mate of the *Martha Cobb*, in recognition of his gallantry in taking the command of a small boat and making two trips to the *Grecian* for the purpose of taking off the crew.

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"BLUE BILLY" NOT TO BE USED AS BALLAST.—*Notice to Owners and Masters.*—The attention of the Board of Trade has been called to a recent case in which the ballast on board a ship caught fire in consequence of the vessel having been partially ballasted with "Blue Billy," a species of quicklime refuse, which is obtained from the Purifiers of Gas Works, and is highly charged with inflammable impurities. The "Blue Billy" in this instance was covered over with damp ballast, and the heat being unable to escape, the woodwork of the vessel caught fire, and damage to the extent of some hundreds of pounds appears to have been occasioned. Masters and Owners of vessels are cautioned that this refuse is highly dangerous, and should on no account be used as ballast. If in any case it comes to the knowledge of an officer of the Board of Trade that this ballast is put on board any ship she will be detained as unsafe, and the case will be reported to the Board of Trade with a view to deciding whether steps should be taken against the persons causing it to be put into the ship.—THOMAS GRAY, Assistant-Secretary, Marine Department.—Board of Trade, February, 1884.

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OFFICIAL INQUIRIES AT HOME, 1884.

2111. *Stowell Brown*, ship; built at St. Martin's, N.B., 1883; owned by M. Le B. Vaughan; tonnage, 1,369; Penarth to Rio Janeiro; coals; lost near Credan Head, Waterford Harbour, February 13, 1884. Inquiry held at Liverpool, March 10, 1884.

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before Raffles, Judge; Ward and French, N.A. Master in default for attempting to enter Waterford Harbour on a falling tide, and for refusing the assistance of a pilot and tug when offered. Certificate suspended for six months.

2115. *Notting Hill*, s.s.; built at Govan, Glasgow, 1881; owned by the Notting Hill Steamship Company, Limited; tonnage, 2,115; London to New York; general cargo, &c.; abandoned at sea, February 5, 1884. Inquiry held at Westminster, March 13, 1884, before Rothery, Wreck Commissioner; Ronaldson, Beasly, and Robinson, N.A. Accident due to ship striking an ice floe, which caused her to leak very severely. Abandonment justifiable.

2116. *Little Racer*, schooner; built at Padstow, 1862; owned by Mr. J. M. Fishley and others; tonnage, 134; Plymouth to Cork; manure in bags; foundered at sea, February 10, 1884, when loss of life ensued. Inquiry held at Plymouth, March 12, 1884, before Shelley and Luscombe, Justices; Moresby and Pattison, N.A. Loss caused by heavy gale, which caused her to labour so severely that she eventually foundered.

2117. *Dartmouth*, s.s.; built at Campbeltown, 1883; owned by the Haytor Mining Company; tonnage, 229; Millom, Cumberland, to Newport, Mon.; coals; supposed to have foundered at sea. Inquiry held at Liverpool, March 18, 1884, before Raffles, Judge; Forster and Powell, N.A. Probably foundered in gale, which sprung up soon after vessel left Millom. One boat washed ashore on coast of Anglesey.

2120. *Nokomis*, barque; built at Glasgow, 1876; owned by Mr. McCorkell; tonnage, 853; Londonderry to Baltimore; ballast; but on account of heavy weather, returned from sea and anchored near Innishowen Head, with pilot on board. Lost near Portstewart, with all hands, January 26, 1884. Inquiry held at Londonderry, March 15, 1884, before Harvey, Judge; Knox and Ward, N.A. Casualty caused by the parting of the cables and drifting on shore in an exceptionally heavy gale of wind.

2121. *Glengarry*, s.s.; built at Middlesborough, 1866; owned by Mr. Lennard and others; tonnage, 276; Grangemouth to Rotterdam; coals; abandoned off Flamborough Head, February 15, 1884, when loss of life ensued. Inquiry held at Middlesborough,

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March 15, 1884, before Coleman, Judge; Comyn, Harland, and Kiddle, N.A. Loss caused by heavy sea being shipped, causing vessel to heel over, and cargo to shift.

2123. *West Ridge*, ship; built at Govan, 1869; owned by Mr. W. B. Sprouler; tonnage, 1,400; Liverpool to Bombay; coals; supposed to have foundered at sea. Inquiry held at Liverpool, March 18, 1884, before Raffles, Judge; Pickard and Anderson, N.A. No evidence adduced as to cause of loss.

2124. *Guy Mannering*, s.s.; built at Newcastle-on-Tyne, 1873; owned by Mr. J. J. Langland; tonnage, 2,114; Rangoon to U. K.; teak and cutch; stranded on South Rock Shoal, County Down, February 21, 1884. Inquiry held at Glasgow, March 19, 1884, before Sharp and Marshall, Justices; Parish and Ward, N.A. Master in default for setting wrong courses. Certificate suspended for three months.

2125. *Excel*, brig; built at Prince Edward's Isle, 1866; owned by Mr. S. Stephens and another; tonnage, 262; London to Newcastle; chalk; stranded at mouth of River Tyne, February 28, 1884. Inquiry held at North Shields, March 19, 1884, before Cleugh and Green, Justices; Hight and Parfitt, N.A. Master in default for making no allowance for tide when entering the river. Certificate not dealt with.

2126. *Truth*, barque; built at Hylton, Co. Durham, 1874; owned by Messrs I. and W. Ellis; tonnage, 496; Middlesborough to Buenos Ayres; railway material; stranded on Sherringham Bank, Norfolk, March 3, 1884. Inquiry held at Hull, March 21, 1884, before Twiss, Judge; Castle and Vaux, N.A. Accident due to ship missing stays, and no room to wear. In charge of pilot.

2127. *Rosalind*, ketch; built at Golmpton, 1880; owned by Mr. C. Hellyer; tonnage, 73; on a fishing cruise in North Sea; lost in Robin Hood's Bay, February 19, 1884. Inquiry held at Hull, March 24, 1884, before Twiss, Judge; Castle and Vaux, N.A. Master in default for incorrectly estimating his position and for keeping no look-out. Reprimanded.

2130. *Lofna*, s.s.; built at Low Walker, 1877; owned by Mr. G. Petersen; tonnage, 502; Burntisland to Korsoer, Denmark;

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coals; stranded off Reefness Point, Denmark, November 27, 1883. Inquiry held at Leith, March 23, 1884, before Garland and McIntosh, Judges; Ward and Pattison, N.A. Master to blame for having steered too southerly a course after passing Seierö Point, under the impression that such a course would carry him clear of Reefness.

2131. *Conqueror*, ship; built at Middlesborough, 1866; owned by Mr. G. N. Gardiner; tonnage, 599; Cardiff to Valparaiso; coals; supposed to have foundered at sea. Inquiry held at Bristol, March 22, 1884, before Rothery, Wreck Commissioner; Wilson and Kiddle, N.A. In good and seaworthy condition when leaving Cardiff. No evidence forthcoming as to cause of loss.

2132. *Llanarthen*, s.s.; built at Wallsend, 1879; owned by Mr. C. E. Stallybrass; tonnage, 1,028; Cardiff to Colombo; coals; abandoned at sea, February 2, 1884. Inquiry held at Bristol, March 18, 1884, before Rothery, Wreck Commissioner; French and Davies, N.A. Loss caused by vessel springing a leak. Abandonment justifiable.

2133. *Moel Rhiwan*, barque; built at Sunderland, 1878; owned by Gwynedd Shipping Company; tonnage, 1,085; Newport (Mon.) to Valparaiso; coals; abandoned near Lundy Island, February 13, 1884. Inquiry held at Bristol, March 19, 1884, before Rothery, Wreck Commissioner; French and Davies, N.A. Casualty due to cargo being improperly stowed, and shifting over to port-side, thereby throwing her on beam-ends, causing her to fill and eventually founder.

2134. *Derbyshire*, ship; built at Liverpool, 1863; owned by Mr. W. Griffith and others; tonnage, 1,163; San Francisco to Queenstown; wheat; damaged whilst at sea, by shipping water during heavy weather, when loss of life ensued. Inquiry held at Bristol, March 21, 1884, before Rothery, Wreck Commissioner; French, Davies and Moresby, N.A. Casualty due to heavy weather, but vessel too deeply laden when leaving San Francisco, and insured much above her value.

2135. *Minnie*, ketch; built at Bristol, 1879; owned by Mr. M. Whitwell and others; tonnage, 110; Brussels to Liverpool; marble, &c.; foundered in Jack's Cove, February 27, 1884.

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Inquiry held at Bristol, March 21, 1884, before Rothery, Wreck Commissioner; Wilson and Davies, N.A. Loss caused by vessel being taken through a narrow and dangerous channel in which she struck on a rock. Master in default.

2136. *Zephyr*, schooner; built at Montrose, 1881; owned by Mr. A. Mackie; tonnage, 112; Sunderland to Montrose; coal; stranded on Coquet Island, February 8, 1884. Inquiry held at Aberdeen, March 24, 1884, before Donald and Jameison, Justices; Methven and Harland, N.A. Master to blame for neglecting the lead in thick weather, and when close in shore. Certificate suspended for three months.

2137. *Princess Alexandra*, s.s.; built at Port Glasgow, 1863; owned by Messrs. W. Sloan & Co.; tonnage, 352; Swansea to Glasgow; pig iron, &c.; stranded near Whitehead, Co. Antrim, February 29, 1884. Inquiry held at Belfast, March 24, 1884, before McCarthy, Judge; Beasley and Comyn, N.A. Master in default for careless navigation, being over confident. Certificate suspended for three months.

2139. *Captain McClure*, s.s.; built at Newcastle-on-Tyne, 1876; owned by Mr. M. Murphy; tonnage, 285; Newport (Mon.) to Cork; coals; lost near Smalls Lighthouse, March 4, 1884. Inquiry held at Dublin, March 28, 1884, before O'Donel, Judge; Anderson and Kennedy, N.A. Accident due to unskilful and careless navigation on the part of master. Certificate suspended for six months.

2140. *Rose*, s.s.; built at Linthouse on the Clyde, 1883; owned by Mr. A. A. Laird; tonnage, 169; Portrush to Glasgow; passengers and cargo; stranded near Millport, Firth of Clyde, March 1, 1884. Inquiry held at Glasgow, March 28, 1884, before Rothery, Wreck Commissioner; Parish and Parfitt, N.A. Master and mate to blame for stranding, in not paying more attention to the steering, being at the time both on the bridge.

2141. *Earl Beaconsfield*, four-masted ship; built at Port Glasgow, 1883; owned by Mr. A. McAlister; tonnage 1,893; Glasgow to San Francisco; coal and general cargo; abandoned off Irish Coast, February 13, 1884; but subsequently salved. Inquiry held at Glasgow, March 28, 1884, before Rothery, Wreck

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Commissioner; Parish, Parfitt and Robinson, N.A. Vessel having encountered very severe weather, the sails having been blown away and the cargo shifted, the master was not to blame for leaving her when he did.

2142. *Said*, s.s; built at Sunderland, 1870; owned by Mr. A. P. Harrison; tonnage, 667; the Tyne to London; coals; supposed to have foundered at sea. Inquiry held at Newcastle-on-Tyne, March 31, 1884, before Rothery, Wreck Commissioner; Knox and Pattison, N.A. In good and seaworthy condition when leaving port; nothing to show how she was lost.

2143. *Sybil Wynn*, brig; built at Portinllaen, 1873; owned by Mr. D. T. Edwards; tonnage, 191; Troon to Limerick; coals; foundered off Ardglass, February 24, 1884. Inquiry held at Liverpool, April 3, 1884, before Raffles, Judge; Comyn and Harland, N.A. Having met with severe weather whilst lying at anchor in Belfast Lough, and her cables having parted, the master beached her, but when taken off the ground she sprung a leak and foundered.

2145. *Ardeer*, s.s.; built at Paisley, 1871; owned by Mr. G. Bargate; tonnage, 141; Workington to Chatham; steel plates; supposed to have foundered at sea. Inquiry held at Liverpool, April 4, 1884, before Raffles, Judge; Forster and Grant, N.A. Well found, and not overladen. Probably foundered in gale of January 26.

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### Official Inquiries Abroad, 1884.

2110. *Govino*, s.s.; damaged on or near Perim, December 26, 1883. Inquiry held at Bombay, January 29, 1884. Master to blame. Censured.

2112. *Cape Verde*, ship; stranded at Port Adelaide. Inquiry held at Adelaide, January 18, 1884. Accident caused by ship taking a sheer. Pilot in charge.

2113. *India*, barque; stranded in Martin's Bay, Hokianga, November 17, 1883. Inquiry held at Auckland, December 12, 1883. Master to blame, for want of care in allowing ship to drift ashore in broad daylight.

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2114. *Tui*, s.s.; stranded on Passage Rock, N.Z., December 30, 1883. Inquiry held at Wellington, N.Z., January 9, 1884. Mate guilty of error of judgment.

2118. *Benledi*, schooner; lost near Fort Young, September 5, 1883. Inquiry held at Rosean, Dominica, September 17, 1883. Loss due to cables parting. Master on shore at time.

2112. *Stanhope*, barque; lost at Rodrigues, November 16, 1883. Inquiry held at Mauritius. Master to blame for careless navigation.

2122. *Frederica*, barque; stranded on Vansittart Shoal, December 24, 1883. Inquiry held at Melbourne, January 8, 1884. Loss due to error of judgment on part of master.

2128. *Glenely*, s.s., and *Dreamland*, sailing boat; in collision in Sydney Harbour, December 16, 1883. Inquiry held at Sydney, January 11, 1884. Master of *Glenely* and person in charge of boat both to blame.

2129. *Boomerang*, s.s., and *Commodore*, tug; in collision in Sydney Harbour, December 27, 1883. Inquiry held at Sydney, January, 1884. Master of *Boomerang* to blame for steering improper courses. Certificate suspended for three months.

2138. *Sattara*, barque; lost on Coast of Japan, January 13, 1884. Naval Court held at Kanagawa, February 13, 1884. Master to blame for neglecting the lead. Certificate suspended for three months.

2144. *Chittoor*, barquette; stranded on Ironbridge Shoals, January 17, 1884. Inquiry held at Adelaide, February 22, 1884. Master to blame for gross misconduct and incompetency. Certificate suspended for three months.

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# MARINE BOILER CONSTRUCTION, CORROSION, AND PRESERVATION.

By JOHN A. ROWE.

(*Continued from page* 352, *April No.*)

## Boiler Corrosion.

The agents at work within a boiler to destroy it are many and subtle. Variations of temperature and pressure give rise to ever varying expansion and contraction of the metal; the iron, therefore, becomes depreciated in ductility, even if grooving cannot be traced to this mechanical action. But it is chemical and galvanic action that we must study if we would understand and vanquish the most formidable enemies we have to contend with. What is chemical action?

Chemical action is the fusion or union of two or more elements, the compound formed by the union being, perhaps, utterly unlike either of the constituents which gave it birth. Thus common salt is a compound of the gas chlorine and the metal sodium. In itself it bears no resemblance to these. Marble is a compound of oxygen, the bright looking metal calcium, and carbon. Here, too, there is no resemblance between the compound and the elements which constitute it.

Galvanic action is best described by referring to a galvanic battery. There we have metals of dissimilar qualities connected to each other by a metallic wire, or else touching each other. These dissimilar metals are acted upon by some acid, such as hydrochloric, or sulphuric acid, and the more oxidizable metal corrodes, whilst the least oxidizable metal remains almost uninjured.* Thus when two plates, one of copper, or iron, and one of zinc are placed in a vessel containing a strong exciting liquid, the zinc will oxidize; a current of electricity will flow from the zinc plate to the iron or copper plate; it will pass through the iron or copper plate, through the metallic wire

* And chemical action as above explained takes place between the liquid and the more oxidizable metal which corrodes.

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we will suppose connects the metals, down through the zinc plate, and so on continuously as long as there is zinc to oxidize. The metal most readily attacked is termed the positive, its neighbour, the negative plate.

For galvanic action to proceed it is not necessary that plates positive and negative to each other should be connected by a metallic wire. The same action would proceed were they rivetted together, or resting against each other. Only it is necessary that they be both immersed, partly, at least, in an exciting liquid. And salt water forms a liquid sufficiently saline to oxidize zinc and generate a feeble current of electricity—but of this, more hereafter.

### Oils and their Acids.

Most engineers have noticed how rapidly some boilers have wasted internally at the water line. How is this to be accounted for? Principally, in my opinion, by the injudicious use of oil and tallow unsuitable for the internal parts of an engine and boiler. We are a little wiser now than we used to be, and, as a rule, avoid such oils as are injurious to the boilers, but there are exceptions to the rule, and thus we occasionally see a boiler terribly corroded at the water level.

There are three different descriptions of oil used on board steamers for lubricating purposes, viz., animal oil, vegetable oil, and mineral oil. Perhaps the best lubricant is castor oil, but it, as well as olive, and all other vegetable oils, is unfit for internal use, on account of the facility with which it decomposes under a moderate temperature, viz., about 230° Fah. At this temperature these oils decompose into oleic acid, and glycerine; the former being a corrosive agent which attacks the piston, clylinder, slide faces, etc., and then passes into the boiler to affect it at the water line. Nothing but the occasional use of the scum can keep the boiler clear of the influence of this acid. Cast-iron cylinders, cylinder-faces, and slides, have frequently been reduced in places to the consistency of plumbago by this scourge, and the best thing to recommend one's friend to do is to abandon its use entirely as an internal lubricant.

What has been said of vegetable oils applies with perhaps

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greater force to animal oils. They decompose into glycerine and stearic acid, the latter having a great affinity for iron. Tallow is included under the head of animal oil. All these vegetable and animal oils may be useful on bearings, etc., but only the best *mineral* oil (American Residuum) should be used internally. This description of oil is generally spoken of as Crane's oil, Crane being the name of the gentleman who first treated American Residues. It has this advantage over vegetable and animal oils, it does not decompose at the highest temperature possible in steam engines and boilers (except the cylinder be supposed to approach red heat; and then it is doubtful whether any injury would result from its decomposition, seeing that the products of decomposition are hydrogen and carbon), hence the desirability of its more extended use.

Good, practical engineers differ in their views as to the best oils for cylinders. Some use patent indestructible oil (whatever that may be), others mix paraffin and olive oil, and consider it a good internal lubricant (paraffin is mineral oil), whilst others again have made a harmless, yet useful lubricant from olive oil and soft soap. In the latter case, the soda in the soap neutralised the oleic acid of the olive oil, but the compound was, after a time, abandoned on account of the boilers priming whenever it reached them.

### Superheated Steam.

It is said that *free* oxygen is a destructive agent in boilers. It may be; but, with a limited knowledge on the subject, I do not greatly fear its attack. If present, it must be in water (in solution), and may be expelled by boiling. As a rule, little additional sea-water is required for modern marine boilers after they are once filled; so the enemy is not only expelled, but being outside, is kept there. Oxygen, we know, has a great affinity for metals. Iron will burn in pure oxygen.

A very beautiful chemical experiment, one worth describing, may be mentioned here. Take a small iron tube, fill it with iron filings, and place it on a fire so that the centre of its length may become red hot. If vapour of water, or steam, be injected at one end of the tube, a gas will issue from the other end, and on applica-

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tion of a light will ignite and burn with a pale yellow flame. The gas is hydrogen. The steam (composed of oxygen and hydrogen) has been decomposed; the oxygen of the water combining with the iron filings to produce oxide of iron. The hydrogen, freed from its partner, passes onward and produces the yellow flame before mentioned.

The oxygen of water would therefore appear to have a strong affinity for superheated iron, and we need not be surprised to find in practice much corrosion proceeding in boilers wherever flame is acting on one side of a plate, and steam on the other side.

Barff's process of protecting iron is to raise it to so great a temperature as will, by contact of steam, form magnetic oxide of iron over the whole surface to be protected. This process must, no doubt, depreciate the quality of the plate, just as superheated plates are depreciated in quality by a like process; and an experiment with this method has proved its unserviceableness, so far as marine boilers go. The experiment I allude to is this. After a layer of magnetic oxide had been formed, water was splashed over the protected surface while still hot with the view of discovering what effect the incessant priming and splashing of boiler-water would have upon a protected boiler. It was found that the oxide broke in various places, the bare iron was exposed, and thus another superheating process was rendered necessary, and so on, *ad infinitum*. Probably this action, together with the corrosive action of oil-acids, and such acid as may be liberated by the decomposition of organic substances in the boiler, may account for the wasting of boilers above the water-line.

Referring to Barff's process the Admiralty Committee who some years ago investigated the causes of boiler corrosion and published the result of their interesting experiments in a bulky volume in 1880, report as follows:—"It may be more or less applicable for the preservation of iron not exposed to the action of salt water, but upon surfaces to be immersed in salt water it appears to be evident that the coating would not long be maintained, and, under conditions favourable to galvanic action it would, from its strong negative character as regards exposed iron, be more injurious than beneficial."

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And now, before proceeding to discuss what are the best means to prevent boiler corrosion, it would be well to state where boilers corrode most internally. I have already referred to corrosion in superheaters and in the steam space. The stays in the steam space frequently corrode badly at their necks; the ends near the front end plate generally, in my experience, wasting more rapidly than the other ends. This may be also due to excessive temperature. Some stays corrode rapidly just where the steam is massed, or contracted, as it enters the steam-dome neck. This is probably due in part to mechanical friction, but principally to inferior oils which, in a volatile state, pass from the boiler to the engines.

### Galvanic Action.

I have already spoken about the wasting of the plates at the water level. When we look below the water line we find ourselves face to face with evidences of decay of a puzzling and troubling character. So far as we have gone, we seem to be able to assign something like a just reason for decay; but below water line, we are confounded, or have been in the past, by the revelations which meet us in every direction. Each plate has its own story to tell, and the engineer, like the botanist and comparative anatomist, would like to establish an easily understood system of classification. Thus we would desire to be able to speak dogmatically on the subject of boiler corrosion, and say—Plates and stays in steam spaces corrode by chemical action and mechanical action. Plates under water corrode by galvanic action and mechanical action (expansion and contraction); and depreciation of the quality of the iron takes place from ever varying stresses and temperatures. But in the past we have not had sufficient experience to guide us, and it is not, therefore, to be wondered at that many able engineers, through want of knowledge in chemistry and electricity, have scouted the theory of galvanic action. Not many years ago a Commission was appointed to inquire into the causes which led to boiler corrosion, and to suggest some means to lessen the evil. The evidence was somewhat conflicting, but the engineering masses were awakened to a faint belief in the galvanic theory, and to the advisability of abandoning vegetable and animal oils for internal

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lubrication. Yet so capricious has been the action of the mysterious enemy, that even so talented a writer as Mr. Robert Wilson, who has published a cheap and admirable book on steam boilers, speaks on this subject in a manner not calculated to afford instruction.

"Mr. Barnaby of the Admiralty has demonstrated by careful experiment that black oxide, if left on portions of steel plates, will cause pitting on the bared surfaces of the plates."

Common zinc plates if placed in an exciting liquid, such as sea water, will waste away by local galvanic action. Such plates contain impurities such as iron, arsenic, etc., electro-negative to the zinc, and the result is the mass of zinc is split up by internal action; the boiler plates themselves remaining unprotected. So with each plate of the boiler. If during the process of manufacture complete fusion of the different substances do not take place, there will always be the danger of such galvanic action taking place, as I have described takes place in plates of ordinary commerical zinc. But we must not pause at this point in our search after the mysterious causes of pitting.

Lying side by side, rivetted together, are two iron plates under the water level. To all appearance they are alike. Their tensile value and ductility may be alike, but yet it has been proved by experiments with galvanometers that one plate is electro-positive to the other. It accordingly wastes, whilst its neighbour remains unaffected. Here seems to lie the chief cause of corrosion below the water-line. We cannot obtain a couple of dozen plates equal thoroughout in electric qualities. Probably no two plates assume exactly equal electrical states when in contact with an exciting liquid: and therefore when they are metallically united, one becomes positive to the other and galvanic action proceeds. The smaller the difference between the plates, the feebler will be the action. This action is sometimes intensified by differences of temperature in different parts of a plate, or by differences of temperature in two adjoining plates. Thus, from the fact of the furnaces of a boiler being cold at about the line of fires bars (cold relatively to the portions above and below), rapid corrosion takes place at this line; but most practical engineers even to-day maintain that this corrosion is due to mechanical agency.

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Even supposing one could obtain plates of perfectly uniform quality, we have still rivets, stays, tubes, and furnaces (furnaces are generally made of a superior quality of iron), as causes of galvanic activity. These, as a rule, are quite dissimilar to the shell plates. So then, to account for corrosion below water, we must point to plates electro-positive to other plates; or to plates electro-positive to rivets; or to rivets electro-positive to tubes; or electro-negative to them; and in contact with these must be water, holding in solution some chemical substance capable of corroding metals. Given these, galvanic action *must* proceed.

Who in his experience has not heard of boiler tubes (smoke-box tubes), being destroyed in a few months by heavy pitting? And the maker of the tubes, no doubt, suffered in reputation and pocket. Viewed in the light of Electro-Chemistry, it is plain that galvanic action destroyed the tubes, which, by their very superiority of quality, caused them to be positive to the plates around them. Mr. William Parker, the Chief Engineer Surveyor of Lloyd's, has given the results of a number of interesting experiments showing the relative susceptibility of different qualities of iron and steel to corrode under galvanic and other actions: and these closely agree with the previously obtained results reported by the Admiralty Committee in a book already referred to. Properly prepared iron and steel plates of similar size and shape were tested (1) against each other in a boiler protected by zinc plate (2), in a boiler unprotected by zinc plates. The test-pieces lost twice as much of their weight in the second as in the first test.

Another remarkable fact is brought to light by the experiments I am speaking of. It was found that, of the eleven different specimens suspended inside a boiler, and insulated from each other, the steel and best qualities of iron corroded more rapidly than inferior brands of iron. The following experiment is interesting:—

"One set of insulated discs (twenty-two in number) was immersed in sea water, and it was found that, by completing the circuit between any two of them, a galvanic current was set up, the bright Lowmoor plate being electro-positive to the whole of the other plates.'



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The reason why the Lowmoor (the superior) plate was positive to the others appears, from the analysis of the test pieces, given by Mr. Parker, to be on account of its relative freedom from electro-negative impurities such as carbon and phosphorus.

And here it might be well to give a table of substances showing their relative electro-chemical characters. The list is taken from a work on Electricity by Mr. F. Jenkin, F.R.S.

In this list the negative substances precede those less negative; Potassium being the most positive in the list :—

| | | |
|---|---|---|
| Oxygen | Antimony | Nickel |
| Sulphur | Silica | Iron |
| Nitrogen | Hydrogen | Zinc |
| Fluorine | Gold | Manganese |
| Chlorine | Platinum | Aluminium |
| Bromine | Mercury | Manganesium |
| Iodine | Silver | Calcium |
| Phosphorus | Copper | Barium |
| Arsenicum | Bismuth | Tellurium |
| Chromium | Tin | Sodium |
| Boron | Lead | Potassium |
| Carbon | Cobalt | |

The more remote these substances from each other the greater will be the intensity of their action when employed as a galvanic couple.

Dr. Lardner, writing on the subject of telegraphy, speaks thus of a galvanic battery :—

"The electric fluid is evolved by the combination of three bodies: the zinc, the copper, and the acidulated solution in which they are immersed. The production of the current depends on the action of the solution on the zinc. That metal being very susceptible of oxidation decomposes the water which is in contact with it. One constituent of the water combining with the zinc produces a compound called oxide of zinc, and this oxide, entering again into combination with the acid which the water holds in solution, forms a soluble salt. If the acid, for example, be sulphuric acid this salt will be sulphate of the oxide of zinc, and as fast as it is produced

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it will be dissolved in the water in which the metal plates are immersed.

"Meanwhile the copper, not being as susceptible of chemical action as the zinc, remains comparatively unaffected by the solution; but *the hydrogen evolved in the decomposition of the water collects upon its surface* (upon the surface of the negative plate), after which it rises and escapes in bubbles at the surface of the solution.

"It is not essential that the water in which the metals are immersed be acidulated as we supposed with sulphuric acid. Any acid which will promote the oxidation of the zinc without affecting the copper will answer. Nor is it indeed necessary that any acid whatever be used. A saline solution is often found more convenient. Thus common salt dissolved in water will produce the desired effect."

Guthrie, in his excellent book on Electricity and Magnetism, when describing the electrolysis of a weak solution of acetate of lead, writes as follows concerning the effect produced on the *ions* (the substances which are deposited on the electrodes) by the evolution of hydrogen at the surface of the negative electrode :—

"It is necessary that the battery power be not too great, else *the hydrogen is evolved at the negative electrode* along with the lead, owing to the simultaneous decomposition of the water in such quantity that it does not meet with sufficient lead in its immediate neighbourhood to reduce, *and some of the gas escapes as bubbles, which interfere with the regularity of the metallic deposit.*" How the bubbles of hydrogen interfere with the process of deposition is not quite clear, but from the manner in which the deposit of steam boilers is affected I am inclined to think that when decomposition of the water occurs, the hydrogen atom, torn from the atoms of oxygen, is shot with considerable force against the negative surfaces; for whilst some newly formed deposit shows signs of pulverisation, older and hard and thick deposit is removed in flakes as if an incessant cannonading from millions of tiny balls, had after several weeks' work, shaken the scale free from the metallic surface beneath.

Professor Tyndall, referring to the extraordinary power that



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hydrogen gas possesses for transporting heat from one substance to another, combats the opinion of Professor Magnus that "hydrogen conducts heat like a metal," and is himself disposed to account for this remarkable activity by the "great mobility of its particles, which enables currents to establish themselves in this gas with greater facility than in any other gas."

Thus, though it would appear that a strong current of electricity is capable of preventing the deposition of even such solid substances as are attracted to negative electrodes: the experience of the Admiralty Committee proves that a weak electric current tends to promote deposit. They report as follows:—"The hard and adherent scale, which is generally found when zinc is fitted, appears to indicate that the presence of zinc has the effect of hardening the scale and fixing it to the iron." The first-named fact has been taken advantage of by an electrician and chemist of Glasgow, Mr. J. B. Hannay, F.R.S., *Ed.*, to prevent incrustration in marine and land boilers; but before proceeding to describe his simple, yet effective method, I may say that many superintending engineers of fleets of merchant steamers have, for years past, protected their boilers by zinc plates, fixed on iron studs screwed into the boiler-plates, or else hung over stays. Either method is imperfect, the studs being probably superior to the mere suspension from stays. Owing to imperfect connection, a great number of such plates are found to be necessary; but in spite of every drawback they have done great good in the past. By constant inspection (perhaps monthly), by frequent renewals, by exercising the greatest vigilance that metallic contact exists, marine boilers are in excellent condition to-day that have been working hard for periods of from six to ten years. This is saying much, when we recollect the state of some boilers not more than three or four years old.

These zinc plates, however, fast lose their potency as protective agents, owing to an oxide of zinc forming between the zinc plate and the iron with which the zinc was originally in contact. This oxide, being a non-conductor, arrests the flow of electricity, and the plates from this moment are practically valueless. *Zinc, to be usefully employed, must oxidise in metallic contact with the electro-*

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*negative metal it is intended to preserve:* break the contact, and the zinc might almost as well be at the mast-head as in the boiler.

The boilers in use in H.M. Navy are protected by zinc slabs, fitted in the manner already described, clips, however, being used in lieu of studs. The instructions on this point issued to the engineer officers by the Admiralty are as follow:—"Zinc slabs will be suspended in convenient parts of all boilers, and the engineer officer in charge of the machinery, on each inspection of the boilers, is to examine these slabs, and their condition is to be noted in the engineer room register. The object of these slabs is to form a galvanic battery with the shell of the boiler; and by making the surface of the latter below water the negative pole, throw it into a condition in which it cannot be corroded. To effect this object special care must be taken:—

"(*a*) To ensure perfect metallic contact between the zinc slabs and iron stays, or part of the plating of the boiler to which the zinc is attached, the surfaces in contact of iron with iron, or iron with zinc, being filed bright, and means adopted to secure a good grip.

"(*b*) To place the slabs in such positions that every portion of the iron surface may be protected.

"(*c*) To replace, by new slabs, any found upon examination to be deteriorated.

"The zinc slabs appear to deteriorate either by gradually wasting away, or by a gradual change of substance. In this latter case, which is the more common, the zinc slab gradually becomes black in colour, and friable, and, when it has been long exposed, the mere pressure of the hand is sufficient to reduce it to powder."

It will thus be seen that zinc is extensively employed to protect the boilers of H.M. Navy, as well as the boilers of our Mercantile Marine. No prudent well-read man will deny the efficacy of zinc properly applied. Yet I have been put to shame and silence more than once by men intelligent enough as to the externals of nature, but utterly unable to perceive the soul of things. Such men cannot, and probably never will, be able to trace any connection between the oxidation of zinc and the removal of the incrusted gypsum from the heating surfaces. Yet the process is no more marvellous

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than electro-plating; the same subtle force operates in each case. In the electro-plating process the current of electricity flowing from the positive to the negative electrode is so weak as not to disturb the deposition of silver on the article to be covered. In Hannay's method for preventing incrustation, the current of electricity is sufficiently strong to disturb the deposition of scale; hence its usefulness.

In the Admiralty instructions I have quoted, reference is made to two methods by which zinc is destroyed. (1) By gradual waste. This is the manner in which it should waste. (2) By "a change of substance, in which case the slabs become black and friable." This would appear to indicate insulation or imperfectness of contact with the iron, and is the manner in which zinc corrodes when suspended in sea water without contact with iron. I will now briefly describe the process adopted by Mr. Hannay.

The zinc used in this process is of the best quality. It is melted and cast in solid balls, weighing about 46 lbs. each. A copper rod, about an inch in diameter, is thoroughly cleaned and so placed in the mould as to form an axis to the ball. The union of the zinc and copper is so perfect as to form brass at their juncture. The greatest care is taken to obtain perfect metallic contact, this being one of the chief advantages of the system, and the principal cause of its success.

The zinc ball is next subjected to a good hammering, which increases its homogeneity, converts its crystalline character into a laminated one, which prevents its splitting as cast zinc does, and considerably increases its useful duration.

Copper wires are next *soldered* to the ends of the copper rod, and the "Electrogen" is now ready to be fixed in the boiler.

The ball is placed below water line, usually between two boxes of tubes, this being deemed a good place to secure the malleable cast-iron ladle which supports the ball. The copper wires, in connection with the Electrogen, are *soldered* to some parts of the boiler (in marine boilers preferably to the tops of combustion boxes), and when once they are firmly united to the plates, contact ought never to cease, except by the combustion crowns becoming overheated, or by the wires being wilfully severed.

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Thus fitted, the superiority of Hannay's method over other existing methods is shown by the decomposition of the water being so great as to evolve sufficient hydrogen at the negative electrode (the internal surface of the boiler) to preclude the possibility of incrustation.

This is a most valuable incidental action of the Electrogen which even the most ardent believers in galvanic protection were scarcely prepared to expect. But so much is this anti-incrustation action valued by owners of land boilers that they are having Electrogens fitted to their boilers solely for the purpose of keeping the heating surfaces free from deposition.

This mode of applying Voltaic Electricity has been already successfully applied experimentally by Mr. Hannay to much larger structures than boilers, and submerged surfaces like ships' bottoms will doubtless in future be preserved from corrosion and fouling by the action of a low tension electric current. And, if by the employment of either high or low tension electricity the vessel's hull be covered with, as it were, a minute film of hydrogen gas, may we not reasonably hope to find that this reduction of skin friction will give an increased speed through the water, especially through smooth water? The problem is an interesting one.

It is my opinion that marine boilers, if properly constructed, properly worked, and properly protected, should, like their owners, reach the good old age of three score years and ten, instead of being a worry for five or ten years, and then pass into a dishonoured grave!

In conclusion, from what has already been stated it is evident that boilers should be constructed from top to bottom, and from end to end, with plates, rivets, stays and tubes as nearly as possible alike in electrical qualities. It is clearly an error to have common iron in the shell plates and Lowmoor in the furnaces. The chances are that the Lowmoor plate will rapidly corrode by galvanic action. Even if you intend to protect your boilers by zinc, it is still prudent to consider this point, for the greater the boiler's susceptibility to galvanic action, the greater will be the demand on the zinc, and the more costly the means of protecting the boiler.

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A galvanometer might with advantage be used by superintending engineers on samples of iron cut from plates to be used in boilers for their fleets. Possibly its general adoption would be found as useful as the tensile and other tests now in use.

Whether zinc be used or not, the life of a boiler will be much prolonged if steam be slowly raised and the boiler slowly cooled. Quick, fierce alternations of temperature give the boiler aches and pains, and shorten its life by the intensity of its sufferings. For this reason boilers in use in H.M. Navy seldom last so long as those in the Mercantile Marine. The latter though worked hard, are worked regularly. The former are, or used to be, worked spasmodically. For instance, it used to be the practice to perform steam tactics with say, one-half the boilers alight: and in order to execute some manœuvre with skill and accuracy the engines had to be worked at one moment as if every boiler was going; at another moment, "as slow as possible." It also occasionally happened that owing to the uncertainty of the movements of the fleet, the boilers did not receive the treatment most conducive to longevity. There is only one way of preserving such boilers from rapid decay, viz., by keeping the heating surfaces perfectly clean, and by using zinc, or some other electro-positive metal in the boiler, so that *it* may corrode in lieu of the plates to which it is metallically united.

The question has been somewhat sadly asked by shipowners, What is the best way to protect boilers not in use? The following suggestions are offered. First drain every drop of water out of the boilers. Wipe them dry. Then dry them thoroughly by means of stove-fires placed inside the boiler and in the furnaces also if convenient. Having thoroughly dried the boilers place shallow pans with unslacked lime inside; disposing them about in a suitable manner on the tubes and furnace crowns. Next remove the stove and make all the doors, &c., of boiler airtight. The great affinity which unslacked lime has for moisture will prevent dampness taking place, and, if the boilers be opened every three or four months for inspection and for renewal of lime, it will be all that is necessary. This is, I believe, the plan in use in H.M. Navy, or was in use a few years ago, and as it is simple, practical, and conceived on true chemical principles, it ought to be an effective one.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. VI.

JUNE, 1884.

## YACHTS AND YACHT SAILING IN 1884.*

IT is said that the season which has just commenced is likely to be a good one for yacht racing, that contests promise to be more than usually numerous and prizes more than ordinarily valuable. The old British cutter rig reigns supreme, schooners and yawls being scarcely heard of. It appears that the extreme types of the last few years are only giving way to something more extreme, and that the divergence between cruising craft and vessels built for purposes of racing is greater than ever. The turn-out of the present year is chiefly in the smallest and largest vessels; new three tonners are pretty numerous, and there are three racing craft of the largest size which are likely to make 1884 a notable year in the competitions between large cutters. All of them are composite boats, and we may say that this system of construction, combining

* "A Manual of Yacht and Boat Sailing," by Dixon Kemp. Horace Cox (*Field* Office), London.



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as it does great transverse strength with lightness of build, together with the advantage of coppered bottoms, is likely to keep its ground for pleasure craft, the expense of building which is a bar to its use for merchant sailing ships, being of comparatively little consequence in the case of yachts, while its peculiar advantages in them are of greater value.

We may first mention the *Genesta*, built for Sir Richard Sutton by Messrs. Henderson, of Partick-on-the-Clyde. Her length on the water-line is 81 ft., registered length 85·6 ft., beam 14·6 ft., depth of hold 11·75 ft., greatest draught 13 ft, and register tonnage ·74. She is described as having a very clean afterbody, but rather fuller forward than other recent yachts. Her racing tonnage is 80, and she carries 64 tons of lead ballast, of which 60 tons is in the lead keel. It was said that she would sail her first race in the Royal Thames match from the Nore to Dover on the 7th June, but she is at present in Cork, repairing damage sustained in her first sea cruise.

The *Marguerite*, of 60 racing tons, launched on the 12th ult., from Messrs. Inman's yard at Southampton, for Mr. Foster Connor, has a length of 74 ft., beam 13·5 ft., and draught 12·5 ft. She has a lead keel of 51 tons, and 6 tons of ballast inside. Her frames are steel, topside plank teak, and bottom pitch pine, and it is said she has a greater sail area than ever before carried over 13½ ft. beam.

The *Irex* is building by Mr. Fay, of Southampton, for Mr. John Jameson, but it would appear that she is hardly likely to be ready for the earlier races of the season. Her dimensions are—length on water-line 83 ft., registered length 88 ft., beam 15·1 ft., draught 14 ft., register tonnage 75. She will carry the heaviest lead keel ever cast, nearly 72 tons. She also has steel frames.

"These three vessels," says a recent writer in the *Times*, to whom we are indebted for some of the preceding figures, "will, with the *Eryana*, *Marjorie*, *Vandward*, and *Samæna*, make up a goodly fleet indeed of heavy weights. The *forties*, which showed such grand sport last season, are not likely to be in force, but new boats in the twenty, ten, five, three ton, and the length classes will invest the battles of those sporting sections with new life and

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interest. It is only reasonable to assume that a forward movement in regard to speed will be apparent in the three new vessels before referred to." Of the four vessels named as conspicuous in last year's racing, the two first will have more sail area than previously, and hence it will appear that both as regards new craft and improvements in old ones there is likely during the next few months or two to be keen competition for prizes.

One feature common to the three vessels, of which we have given the dimensions above, cannot fail to have escaped notice, the extraordinary amount of lead ballast and the great depth compared to beam now characteristic of the racing yacht. In smaller craft these features are even more strongly marked. Thus a new yacht at Plymouth is described by a correspondent to the *Field*, as follows: —"I judge her to be about 11½ tons displacement, strongly built, with the scantlings of a 10-tonner. She has a lump of lead of about 7½ tons on the keel. She is over 30 feet on the water line, with large overhang and flare abaft, and will draw 8 ft. How much farther is this 3-ton folly going?" Mr. Dixon Kemp, who has written so much and so ably upon the whole question, attempts in a recent number of the *Field* to answer the question thus put by reference to a design to which has been given the name *Ne plus ultra*. It is intended to show the longest and narrowest yacht possible under the present Yacht Racing Association rule which a crew could live in, unless, as her designer says, "a man succeeds in getting a thin crew accustomed to sleep on their sides, and who would not mind coming on deck to turn round." This *reductio ad absurdum* of modern yacht construction, described by Mr. Kemp as "the plank on edge," has a length on water line of 38·5 ft., beam 3 ft., and draught 11 ft., her load displacement being 19·8 tons of which 15 tons is lead ballast on the keel. The tonnage by the Yacht Racing Association rule is, as we have indicated, 3 tons; in fact, a start is made with 3 ft. beam, and then to give 3 tons by the formula,

$$\frac{(\text{length} + \text{beam})^3 \times \text{beam}}{1{,}730}$$

the length necessary is 38·5 ft. By the Royal Thames rule, which



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is even still more inapplicable to present types, and of which the formula is

$$\frac{(\text{length} - \text{beam}) \times \text{beam} \times \frac{1}{4}\,\text{beam}}{94}$$

the tonnage is 1·7, while by the sail area rule, at present admitted as an alternative rule by the Association, the tonnage is 12. The formula for the sail area rule is

$$\frac{\text{length} \times \text{sail area}}{6{,}000}$$

In each of these rules the *length* is length on the water-line. From what we have said it will thus be evident that yachtsmen are as far off as ever from a system of measurement which will give an equitable basis for time allowance, and that the present methods are but a very small improvement upon the old one. The alteration of the time-honoured rule of the Royal Thames Club, which was for long the standard everywhere, was rendered necessary by the appearance of the *Jullanar* a few years ago. In the old rule the length was taken from stem to sternpost, and the *Jullanar*, of which a detailed and interesting description is given in Mr. Kemp's "Yacht and Boat Sailing," has about 10 ft. of immersed counter abaft the post. To meet this new departure it was decided to measure length on the water-line. At the time that further changes in the yacht tonnage rules were under discussion, we suggested, not as a theoretically exact rule, but as a good practical solution of the difficulty, a system of measurement by which the product of the three important dimensions—length on the water-line, beam, and draught—should be multiplied by a factor, determined so as to give an average result not far from the present nominal tonnage of vessels of reasonable form and dimensions. This, we still think, would have been better than the rule which was adopted, and would have been at least more easily ascertained than the sail area tonnage, now so extensively advocated, although there can be no doubt of the fact that the sail area rule is a much better measure of size than anything else at present in force.

The ideal system of yacht measurement was recently described by Mr. R. H. Froude, an eminent authority on scientific questions

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connected with naval architecture, as one which should "handicap all tendencies to depart from an ideal form and fitting up of a yacht." These few words indicate the whole difficulty, as probably no two yachtsmen would agree as to what was an ideal yacht. It is in the nature of things, that whatever rule is adopted, there will still be racing yachts and cruising yachts, and that the vessel which excels in one respect will be at a disadvantage in the other. Still there can be no doubt of the faultiness of a rule which induces a designer to use up so large a portion of his displacement in carrying an immense lead keel, thus uselessly increasing the expense of the vessel, for no commensurate advantage. While remarking upon the prominent defects of the present type of racing yacht, it must, however, not be forgotten that they have usually a very large range of stability, and are, in fact, life boats which it is impossible to capsize.

Mr. Froude suggests as a remedy for the existing state of things: —"(1.) That a committee of thorough yachtsmen should decide, among existing forms of yachts, which are eminently their ideas of cruising yachts. (2.) That by obtaining practical tests on different days in various states of weather, purely empirical diagrams should be drawn up, showing to what extent additional length should be handicapped, to what extent iron construction against wood should be handicapped, to what extent difference of area of sail should be handicapped." He also suggests that "with regard to area of sail, it seems to me that to obtain the sail carrying power by heaving a yacht down to her sailing inclination, with a tackle attached to a spring balance, is a much more satisfactory method of working to the same object, as it leaves the yacht free to adapt her canvas to the weather and points of sailing during the race." What Mr. Froude thus proposes to measure is the inclining moment of sail area, corresponding to a standard angle of inclination. This depends upon the area and the height of the centre of effort of the sail, and thus includes the element of height of sail twice, but a rule could be framed whose practical effect would be to eliminate the extra dimension.

It is said that during the present season a number of clubs will try the accepted sail area rule of the formula we have given; the

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principal objection to it on the part of yachtsmen is that the vessel's tonnage is subject to alteration by change in her rig. The grounds upon which we advocated a rule based upon the three principal dimensions of the vessel, were that sail power depends upon length and stability, while stability depends upon beam and lowness of the centre of gravity, the latter in the case of ballasted vessels depending upon draught. A good racing tonnage rule is certainly a *desideratum*, and we should think the yachting community will not much longer be without one. No rule can, we think, permanently place comfortable pleasure craft on an equality with racers, but it would be easy to reduce the present wide disparity, and afford room for the development of other and more desirable things than heavy lead keels. There is the further objection to racing yachts of the present type, that the lead keel and its connections necessary, make the vessel very costly, while as things have gone of late years she is only successful till a designer produces a vessel with still more lead, and then the ex-racer is next to useless.

Mr. Dixon Kemp's "Manual of Yacht and Boat Sailing" takes rank as the standard work upon the subject, and must, since its first publication, have been of invaluable assistance to owners of pleasure craft, from the dimensions of the racing cutters we have been describing to the tiny sailing canoe. In the earlier editions there were sections treating of yacht-designing; they, however, have since been embodied in a separate work, and, in its later form, the Manual has been entirely devoted to those parts of the subject which are of interest to the practical yachtsman. No pains have been spared to make the work a complete guide to the selection, management, and racing of pleasure craft of all sizes and descriptions. There are, moreover, special chapters upon local types of boats and yachts, showing how special forms of vessel have arisen either from local exigencies or fashions.

Mr. Kemp begins by advice as to the selection of a yacht, and comes to the conclusion that for cruising craft the rig should be cutter up to 80 tons, yawl from 80 to 150, and schooner above that tonnage; for racing craft he favours the cutter, but recommends a moderate tonnage, and, in view of our previous remarks

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upon the subject, we should certainly endorse this recommendation. Valuable information is given as to examination of the vessel, and as to the value of classes in Lloyd's Yacht Register, and in regard to the equipment, there are tables of sizes and illustrations of the various items. One chapter is devoted to the special question of seamanship, and another to the special management required in yacht-racing. By the title of Mr. Kemp's book, *boat* as well as yacht-sailing is implied; and accordingly much information is given upon canoeing, this part of the work being entrusted to specialists. Mr. Baden Powell contributes the section on canoes of the *Nautilus* type—that is, craft fit to sail on comparatively rough water, having good sheer, and yet coming under the definition of a canoe which he tells us "is a vessel propelled with a paddle or with sail by a person or persons facing forward; she is a vessel capable of navigating shallow water as well as open rough water, and she is a vessel not too large or heavy for land portage by two men when her ballast and stores have been removed." Details of the construction and designs are given of several canoes of the *Nautilus* type, and also of the *Pearl* type, the latter being written by Mr. Fredwen the designer of the original *Pearl* sailing canoe. Designs are also given of Mersey sailing canoes, and of an American river canoe. Among the local types of yachts illustrated, are those on Lake Windermere, remarkable for the long overhang counter and heavy lead keels, the yacht of the Norfolk Broads of an almost opposite type, yet both carrying a large spread of sail. The remarks upon the Itchen boats are of additional interest from the fact that the standard of value for competitive sailing among them has been length only. Other notable local craft of which descriptions and designs are given are the Clyde yachts, Penzance luggers, and a large number of centre board boats of various types and sizes. There is a chapter on ice yachting, in which the singular phenomenon of a vessel sailing faster than the wind is elucidated, and an appendix contains a dictionary of useful information on yachting. We believe that another edition of this valuable work is announced for the present season.

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## MERCATOR'S CHART.

### ITS HISTORY, USE, AND ABUSE.

(*Concluded from page* 286, *April No.*, 1884.)

IT would serve no useful purpose to enter into fuller details as to the continual and continuous discrepancies between charts and sailing directions, as arising out of the projection of the magnetic compass on the former, and the use of magnetic bearings and courses in the latter. If, however, our observations on this subject have any weight it is time that a change were made, and a return to the old system of the true compass commenced—if not immediately adopted in its entirety—by the introduction of a true compass within, or it might be exterior to, the magnetic one on charts, and true bearings and courses bracketted with magnetic bearings in sailing directions; and thus the seaman might be gradually inducted into a better, because a more correct, method of navigation. The gradual change is probably the best for the following reasons:—

On taking stock of the charts and nautical publications of the different maritime nations, in so far as relates to the delineation of the compass, and to courses and bearings, the following appear to be the various systems adopted:—

Denmark, England, Germany, Italy, Russia, Sweden, and Norway, give the magnetic compass on charts, sometimes subdivided to half or quarter points, and indicating the true North by a star, arrow, or other device; the nautical notices and sailing directions also give "bearings magnetic."

Austria, France, and the Netherlands, whether for charts, nautical notices, or sailing directions, invariably adopt, and refer to, the true compass.

Spain, which formerly gave only the true compass on charts, has recently adopted the magnetic; but, nevertheless, retains, as of old, true bearings for nautical notices and sailing directions.

Turning to the United States there seems to be at present no unanimity in the various official departments. The charts of the

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Hydrographic Bureau give both compasses—the true within the magnetic—and both are fully delineated; but for the charts of the U.S. Coast Survey the magnetic compass is adopted. Previously to the beginning of the present year the nautical notices of the Hydrographic Bureau were issued "bearings magnetic;" but now these notices are in agreement with the various books of sailing directions issued by that department, and which give "true bearings" exclusively. The Lighthouse Board, however, adopts "bearings magnetic" for both notices and light books.

Abroad there are now no private publishers of charts and sailing directions; but there are in England, and these English firms date back for a century or more; but whereas they formerly issued their publications true, they have finally fallen into the now more common system of the correct magnetic.

The departments that adopt the correct magnetic for both charts and sailing directions are certainly consistent among themselves, even if their consistency may be assumed to take a wrong direction, as it certainly does, since, by treating the subjects through the medium of a continually changing element, the corrections, necessary for maintaining a barely *approximate* accuracy, must be unending, even when no local change has occurred except in the variation of the compass. To this extent are they chiefly at a disadvantage as compared with the departments that use the true compass.

The U.S. Coast Survey Report for 1878 has the following trite remark on magnetic observations:—"It is generally known that the variation of the compass, at positions off the coast, can be marked on charts with reasonable accuracy, but not as the result of observations recorded at sea. To obtain data of such importance the magnetic declination must be known not only at the field points adjacent to our coasts, but also for many places in the interior of the continent of North America. Hence, for whatever purpose the observations have been made on land, within the last two centuries, the determinations all become of great account as items of the large aggregate needful for accuracy in marking compasses on the coast charts of the United States."

It has been well observed that Variation Tables and Charts, "besides the purposes of general reference, are useful at sea when

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the ship changes the variation rapidly, and when, from the state of the weather no observation has been possible. They may also be of assistance in checking a gross error in observation. But such Tables or Charts would become a serious detriment to navigation if they were allowed in any degree to set aside observation," for, in an iron or composite built ship, or, indeed, in a wooden ship with massive iron steering gear, observation merely gives the error of the compass, as eliminated out of the difference between the observed and true bearings, and for a particular direction of the ship's head.

The opinion of Raper, long ago expressed, is as true to-day as it was in 1846. "No number of observations, however great, affords the means of separating, with certainty, the observed variation into its two components, namely, the *correct magnetic variation* and the *local deviation*. Therefore, when these two are required separately, and with accuracy, the variation must be determined out of the ship." And again,—"the process which refers to the entire correction alone, without deducing the local deviation at all, appears to be the best for practice, as the most obvious, simple, and direct. The entire correction, being found directly in all observations at sea, is exempt from all confusion and obscurity, in the application to the right or left, and therefore not exposed to mistakes."

It would not be difficult to prove, through numerous instances, that a very large amount of shipping casualties occurs through a servile reliance on the "variation" as given on the chart and an overweening affection for the pole compass. The same remarks apply with equal, if not with greater, force to the various "detectors" and similar instruments, which being set for an erroneous variation, naturally give an erroneous magnetic course or bearing.

Let there be no mistake on one point; we have unbounded confidence and implicit faith in mathematical results when these are deduced from accurate physical data; and Gauss' theory of the magnetic elements, and of terrestrial magnetism in general, is at the present time not only the most elegant but the most perfect with which we are acquainted,—being the result of close reasoning and strict investigation. Nevertheless the pertinent question

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will still obtrude itself—are we so sure that we have the whole of the data necessary for the compilation of a strictly accurate variation chart of the world?

We therefore advocate without hesitation that true compass bearings be delineated on charts, *with* the magnetic, as the latter appear to be a necessity for the present.

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## SAFETY AT SEA; OR, COMPETITION AND QUALITY IN RELATION TO SHIPPING LEGISLATION.

*To the Editor of the "Nautical Magazine."*

SIR,—The Merchant Shipping Bill is one sign of a change which has often been remarked, but which has not been adequately pondered. The capacity of Englishmen for anomalies is without parallel in human experience. A great Revolution may be in progress amongst us whilst the agents who are the most active in promoting it are maintaining with intolerant, and even persecuting zeal the very principles they are engaged in overturning.

This, as has often been vaguely and confusedly noticed, is what is happening with regard to our economical creed. If free traders are to be found anywhere, surely Mr. Gladstone, Mr. Bright, Mr. Fawcett, and Mr. Chamberlain are entitled to that name. Yet all these, and many more like them, have combined against the fundamental principle of free trade, freedom of contract, and Lord Wemyss and the Liberty and Property Defence League are left crying in the wilderness with unavailing protests in favour of the lost doctrine of letting things alone. Only imagine that the mantle of Richard Cobden should have fallen upon the shoulders of the nobleman best known by the title of Lord Elcho. It is true that interference has hitherto been advocated chiefly in respect to the home relations of industry. It is true also that the great free trade leaders have headed the movement when it related to land, which by many economists is held to be an exceptional interest. It is true that this heterodox doctrine has been held by Adam Smith as well as by John Stuart Mill, and that Richard Cobden himself

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would have joined with Mr. Bright in restricting the liberty of landowners. But no one has shown, no one has made any pretence of showing that there is any distinction in principle between the home and foreign relations of industry, capable of justifying interference in the one case, and condemning it in the other, and no one has succeeded in showing that there is any such distinction between land and other kinds of property.

No such distinction exists, and consequently the logic of facts has proved too strong for the temporising expediency even of politicians furnished with theoretical principles which they do not understand. The same tide of popular opinion which has forced our statesmen to interfere with freedom of contract in relation to land, has now brought them to interfere with freedom of competition in relation to shipping, the very crown and glory of our mercantile system, and the especial boast of free traders. It is true that even this interference is not new, but it is under the special guardianship of the free trade leaders that it has been waxing bolder and more aggressive.

As one who has always been an uncompromising opponent of the *laisser faire* principle, on which account I have suffered much obloquy and misrepresentation from "orthodox" economists, who have failed to perceive that I was equally opposed to arbitrary interferences with industrial organization, as well as a more consistent supporter than themselves of the principle of private property which underlies their theory of freedom of competition, I have not witnessed with dissatisfaction the discomfiture of a narrow school which has done much to discredit the reputation of political economy as a science. But what I wish now to do, is to point out the want of consistent principle with which shipping legislation is, under such guidance, now being dealt with.

As an illustration of the way in which people deal with theoretical principles, it may be worth while to quote what an enthusiastic free trader could say without exciting surprise about our shipping trade, at the very time when that trade was beginning to suffer from legislative interference. In the "Journal of the London Statistical Society" for March, 1882, in a report on shipping statistics for the previous ten years, Mr. John Glover says:—

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"It is doubtful whether any of the great economic changes of the last forty years have so completely written into our public records the confutation of its opponents, and the justification of the philosophers and statesmen who are responsible for the repeal of the Navigation laws has done. It was said that we were giving away all our maritime advantages for nothing; that we should ruin our flag; make the certificate of British registry not worth the parchment on which it was written, and so, acting like prodigals, that we should soon be in want. The tables I have the honour to submit to-night show that we have increased in scattering abroad; and that what is lost is totally insignificant compared with what we have found through the simple process of repealing the unwise interference of our ancestors, and leaving the trade in carrying to proceed on the basis of economic liberty, instead of the mere political distinction of the flag carried at the mast-head."

It would be easy, if it fell within my subject, to show that Mr. Glover's statistics, interpreted without prejudice, afford small ground for his boasting, but upon this I forbear to enter. It is worth noting, however, that the argument which he thinks disposed of his opponents, and which he is not alone among the theorists of his school in using, is not a free trade, but a protectionist argument, and, moreover, a bad argument, by whomsoever it is used. It is no part of the case of the free trader to maintain that any particular industry will flourish in a particular country under free trade. What he does maintain is, that if a native industry is superseded by a foreign one, it is because the latter supplies a better and cheaper article, and that therefore it is for the benefit of the country that the former should be superseded. The former argument is, in fact, a logical absurdity, because free trade is not advocated as a means of enabling a single aggressive community to outstrip all its rivals, but as a universal policy, and it is impossible that all communities can gain relatively in a universal competition for the extension of a single trade. But Mr. Glover and his fellow-enthusiasts knew well that in appealing to the success of free trade in enabling us to vanquish our rivals, they are appealing to the strongest prejudice of an aggressive commercial community.

There can be no doubt that our free trade policy has contributed

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largely to the expansion of our industry ; but where the partiality of the hotter headed partisans of our policy is shown, is in steadfastly ignoring the conditions under which it has done so.

The great advantage that free trade has conferred upon us has been the giving of free ingress to foreign supplies of food. The free importation of raw material not grown at home, is not peculiar to free trade, and whatever the advantage may be of freely importing manufactures, our own industrial development has made us virtually independent of foreign supplies, and it would not have materially affected the results of our policy whether we had imported them freely or not.

The source of our gains from free trade thus admits of being comprehensively stated. It has transferred our dependence for good supplies from the productiveness of our own soil to that source combined with the purchasing power of our exports. I have elsewhere shown that the latter, as a source of maintenance, is by natural law a temporary and precarious resource ; but it is of the effect of this dependence on the quality of our productions, that I have now to speak.

As our dependence on foreign food supplies grows, so grows the necessity of maintaining and extending independently of the foreign demand, the aggregate value of our exports. If that demand is too restricted to meet our requirements, there is one way only by which we can make it adequate—by offering greater inducements. Thus when our imports tend to outrun our exports, we are forced to increase the latter in quantity relative to value, in order to dispose of a larger aggregate value of them. This in time proves disastrous to the producers, and compels them to have recourse to the final resource of cheapening, lower quality in order to maintain their place in the markets. This process, which has been fully exemplified in our mercantile history, I have traced to its sources in the chapters on competition in " The Economy of Consumption." The urgent recommendations of such free trade authorities as the *Times* and the *Economist* to our manufacturers, to maintain the quality of their productions, is, in these circumstances, a logical absurdity. Even if it were possible, which experience has proved it not to be, to expand exports without reducing quality, it is at once insisting

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that competition shall be free, and that all competitors shall exercise a foresight and self-denial which the wisest competitors seldom have. How this applies to the growth of risk in our shipping trade and to proposed legislative remedies, I cannot better show than by an extract from one of the chapters already referred to, of a book published four years before Mr. Glover's report.

The repeal of our Navigation Laws was preceded by the most absolute predictions of the unqualified advantages of opening our ports to all the world. I am not concerned to discuss the general policy of such a measure, nor shall I consider whether its advantages might have been increased or diminished by any conceivable restrictions. This is a question which does not belong wholly or strictly to economy, but is rather a question of general policy. But there is a question of fact connected with this and similar questions of policy which does belong to economy, and which has been frequently misrepresented by the advocates of competition, although no one makes louder pretensions to economical infallibility than they. We had not long enjoyed free trade in shipping until loud clamours arose about the unseaworthiness of many of our vessels, and the objectionable and dangerous practices which had become customary in loading them; and Parliament, so great was the excitement, had to treat the matter as urgent, and pass a temporary measure preparatory to more permanent and deliberate restrictive legislation. Now the peculiarity of the case is this. While our ports have been thrown open to foreign vessels without restriction, our own vessels are subject to restrictions from which foreign vessels are free, because we are in their case without the means of enforcing them. Whatever this arrangement may be called, or by whatever prejudices or principles it may be defended, it is not free trade.

The deterioration of our vessels, and the introduction of doubtful or objectionable practices of loading can surprise no one who knows what competition is. Safety, like any other quality, is merely a question of price; and life is held in no greater respect by competition than any other alien interest with which it has to deal.

When competition becomes keen, and price has to be reduced,

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the margin of safety, like the degree of any other desirable quality, will be reduced, and the reduction will go on gradually but steadily till the whole margin has been worn away.

It is in vain for the advocates of competition to turn attention away from this operation to another which proceeds simultaneously with it. We have already seen that competition does not operate on quality in one direction only, and in the case under consideration we have one of the most striking instances of this that could possibly be produced. At the very time when the condition of our shipping has provoked complaints and compelled legislation, we have been approaching the culminating point of an epoch of development in shipping unapproached for extent of improvement by any period in the history of the world, and in this development the country in which these complaints have been made has taken the lead. In our trans-oceanic steamers, and in our other leading lines, comfort and safety have been amply provided for, nor are our high-class vessels for the conveyance of goods inferior in this respect to our passenger ships.

Now it is to be observed first, that this contrast is not altogether a normal or typical one. The fact only of the contrast is representative; the extent of it is not. A time of development always shows competition to its greatest advantage. When the development has culminated, and when increasing numbers are pressing forward to take advantage of it, the strain begins, and the inevitable deterioration sets in. But in any case, as already said, the tendencies of competition are not uniform, and there is nothing to be surprised at if, under special circumstances, we find extremes of high and low quality in the same market. Nor is there so much as many imagine to vaunt in the one case or to censure in the other. It never was, and it never will be a result of competition, to equalize all competitors. It is not by monsters in human shape that ill-built, worn-out, or overladen ships are sent to sea; it is by men of like feelings and aspirations with those who own the sumptuous floating palaces which are navigated with the most unerring certainty, but by men under the grinding pressure of necessity. It would be of no avail that any individual should be more scrupulous than others. What competition demands will be

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done, and human safety never yet stood in the way of human enterprize. The question is one merely of the urgency of demand, and if this should continue to increase, legislation itself will be powerless to arrest its consequences. This is the serious consideration, and that which ought most to occupy the attention of our legislators. Restrictive legislation applied exclusively to ships of home production or ownership has no tendency to improve the demand for shipping, or render it more remunerative. It has a tendency to turn it into channels beyond our control, and it has also a tendency, perhaps more dangerous, to provoke evasion.

In speaking of the growth of foreign shipping, Mr. Glover says: "It is moreover true that besides being built here, a considerable portion of the steam tonnage under some of the foreign flags is owned by British subjects." Thus he refutes his own boast, and shows that our merchants already appreciate the advantage of a "protected" flag. Any increased stringency of restrictions upon our own flag would certainly increase this tendency. To maintain a given standard of excellence in our own shipping, while we throw our trade open to all the world will certainly not alter the character of our demand, nor improve the aggregate character of the supply. It will only have the effect of throwing a larger section of our trade into the hands of our foreign competitors.

This view of the subject may not readily commend itself to our great shipowners, many of whom are in their own interests strict free traders; but it will be appreciated by those on whom the brunt of the competition falls. It is certain, too, that the result of our legislation will be determined solely by its capacity to control the character of the demand. If rotten ships are wanted, and if the home supply alone is restricted, the demand will certainly be satisfied abroad.

To prevent misconception of the argument I have quoted, I may say that the chapter from which it is taken deals not with competition as a whole, but with over-competition, the nature of which has been specifically defined in a preceding chapter.

After other illustrations of the effects of over-competition, I conclude thus: "It is not to be forgotten, however, that the effects



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of competition on quality are not uniformly in the wrong direction, and that the evils attributed to it in this chapter are due mainly not to competition, as such, but to over-competition. Apart from the obvious advantages which quality gives to the producer, there is in men an inherent love of excellence, and a desire to earn what they earn honestly. These principles are not easily suppressed, and they are only overborne, not extinguished, by extreme competition. The milder forms of competition may even conduce to promote them; and it is only by the life-and-death struggle that they are effectually crushed. All competitors are never in this position, for the chances of all are never equal, and therefore competition in its worst forms can make out a plausible case to disguise its misdeeds. ROBERT S. MOFFAT.

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## RECENT IMPROVEMENTS IN SHIP SIGNAL-LIGHTS.

By J. Kenward, F.S.A., Assoc. Inst. C.E.

*Read before the Birmingham Philosophical Society, April* 24, 1884.

THE efforts of Mr. Plimsoll, of Sir Stafford Northcote, and of Mr. Chamberlain, to promote the safety of human life at sea must be ranked among the best examples of philanthropy and statesmanship of our time. To the first named of these distinguished men it seemed an iniquity that a ship should be permitted to quit our ports with a cargo of such bulk or weight as to endanger her stability in rough weather. To the others it seemed intolerable that the sanction of the law should be accorded to a system of marine insurance which made it possible to convert the destruction of a ship into a source of profit to her owner. The clamour so easily excited with regard to every reform by the individuals whose privileges it limits, or whose wrong-doings it condemns, has been loud-tongued and unscrupulous as ever. But when these voices are hushed, and the measures of to-day are judged by another generation, will there not be a universal acknowledgment of the wise and merciful policy that weakened, if it could not break, the strong arm of Death on the

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sea? Meanwhile, may we soon say of the present Merchant Shipping Bill, as of every ship it refers to, "Fluctuat nec mergitur!"

I have thought that the Birmingham Philosophical Society might be interested in the development of yet another attempt to further the same object—an attempt of more modest proportions, but strictly of like character, though proceeding by different means. I speak of the prevention of collisions by the improvement of the signal-lights carried in all sea-going vessels.

I need not dwell on the dark record of the collisions of the past few years. It is stated, on the unimpeachable authority of the Secretary of the Board of Trade, that 38,722 lives have been lost by all casualties at sea during twelve years from 1871 to 1882 inclusive. How many of these were the result of collisions I have at the moment no figures to prove; nor of the collisions how many occurring in the night were attributable to defective signal-lights. These details are, however, known to the Board of Trade, to the Committee on Collisions, and to the Wreck Commission and Admiralty Courts. It is certain that a much too large proportion of Sir Thomas Farrer's total is thus attributable, and such cases as the *Ville du Havre*, or the *Northfleet* eleven years ago, or more recently of the *City of Brussels* and the *Kirby Hall*, or the *Cimbria* and the *Sultan*, are in the remembrance of most of us. It is equally certain that the tendency to collision is increasing from year to year. The multiplication of ships, especially of steamships, in our Mercantile Marine, the vigorous competition for passengers and for freight, the requirements of the Mail service, the race for the quickest passage—the *Oregon* of the Guion line has just made the run from Queenstown to New York in six days, nine-and-a-half hours!—the growing expenses and diminishing profits which suggest ill-advised economies, are conditions more and more inimical to safety at sea.*

* "In these days, when the risk of collisions is so largely increased by the great speed which is now so common, the importance of strong lights has been greatly enhanced. Where so much attention has been given to increasing the power of harbour and other lights fixed upon the shore, it is surely very obvious that lights on board of ships which are in rapid motion, and which are passing in opposite directions, should not be overlooked."—(Mr. Thomas Stevenson in "Notes as to Lighthouse Characteristics," 1873.)



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On the other hand, the conditions of tempestuous weather, hazy weather, hazy atmosphere, and all the common perils of the deep, remain unaltered and unalterable. The regulations in the Merchant Shipping Acts and Orders in Council for the guidance of vessels meeting, overtaking, crossing, and passing, have been drawn up by the most competent authorities with the most anxious care; yet an element of danger has been found in this very elaborateness, and it has been necessary to sanction a certain freedom of interpretation of the rules, and to leave a somewhat large discretion to the officers of a ship, as witness the celebrated discussion about "porting helm." Mr. Thomas Gray, of the Board of Trade, has invoked the Muses, or rather Mnemosyne herself, to impress the "rule of the road" on seamen by these terse trochaics:—

TWO STEAMSHIPS MEETING.

"When all three lights I see ahead,
I port my helm, and show my red."

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TWO STEAMSHIPS PASSING.

"Green to green, or red to red,
Perfect safety, go ahead."

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TWO STEAMSHIPS CROSSING.

"If to my starboard red appear,
It is my duty to keep clear;
To act as judgment says is proper,
To port or starboard, back, or stop her.

"But when upon *my* port is seen
A steamer's starboard light of green,
There's nought for me to do but see
That green to port keeps clear of me.

"Both in safety and in doubt
I always keep a good look-out;
In danger, with no room to turn,
I ease her, stop her, go a-stern."

Such being the duties and difficulties of navigators, let us see what are their obligations with respect to the ships' lights, and how these lights may avail to help them in their perilous work.

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The legislation affecting ship signal-lights, although perhaps of older origin, is embodied in the "Merchant Shipping Act Amendment Act," of 1862, and in the successive Orders in Council for which it provided. By international arrangement all, or nearly all, the Maritime Powers have adopted a similar uniform system of lights. Briefly described, this is as follows :—

A sea-going steamship when under way should carry on her foremast a bright white light, visible over an arc of the horizon of 20 points of the compass or 225°, at a distance of at least five miles in a clear atmosphere on a dark night. Also she should carry, on the starboard-side, a green light, and on the port-side a red light, each visible, in like conditions, over an arc of 10 points or 112½°, at a distance of at least two miles.

A sailing ship under way, or being towed, should carry the same side-lights as a steamship, but not the white foremast light.

A sailing ship and a steamship, when at anchor, should both carry, where it can best be seen, a white light, visible all round the horizon at a distance of at least one mile.

All the lights are to be shown from sunset to sunrise.

A ship that is being overtaken by another abaft of the range of her side-lights should show a white light over her stern, to warn the overtaking ship, which is bound to keep out of the way, but might not be able to do so if a sufficient light be not shown from the overtaken ship.

I omit for my present purpose mention of other exceptional or occasional lights, and of those for small sailing vessels and open boats.

It is not easy to understand the *rationale* of the plan of one white and two coloured lights. If we assume that the basis of it is *distance*, what reason can be given for a range of two miles in the case of the side-lights, while in the case of the mast light it is five miles?

*Primâ facie* all the elements in this triangular sea-signal would appear to be under a common obligation of equal visibility at the same moment. The difference cannot arise from variations in the heights of the selected positions for the lights above the water, because in nearly all vessels the lower position is high enough to ensure visibility at the

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greater distance stipulated, if the lights be powerful enough. And it could not have been desired that a steamer which is bound by the rules to keep out of the way of a sailing ship should only see the side-lights of the sailing ship (which has side-lights only) at a distance of two miles. The truth seems rather that side-lights being determined on, and colour chosen to distinguish them, it became necessary to sanction the diminished range due to colouring media. Red glass of the lustrous tint produced by chloride of gold absorbs as much as 60 per cent. of the incident light. Glass prepared with copper, preferable often as giving the distinctive depth of tint required, absorbs about 70 per cent. As to green, its shortcomings are considerably worse. The best variety, which is blue in the daylight, absorbs perhaps 85 per cent., and often in a certain state of the atmosphere, and at a varying distance, shows as an uncertain white, while on the other hand, red has a peculiar chemical quality, which in hazy weather lessens appreciably its inferiority to white. I show a chimney of the gold ruby tint for a duplex burner, and plates of the standard copper ruby and signal green tints; all as used for lighthouse purposes. Colour is now discarded by lighthouse engineers as a means of distinction, save in some cases where a sector of the sea in the direction of a danger is to be marked on the border of a white light. Lighthouse characteristics are now rather attained by occulting apparatus giving momentary interruptions of fixed light, or else by revolving apparatus in some form of single-flashing or group-flashing elements. Yet if the end be to indicate the port and starboard-sides of a vessel, colour is, I think, well employed, and when the two lights can be seen together they certainly show well in contrast, separated only by the breadth of the vessel.

Perhaps colour-blindness should be taken into account in this connection. The Board of Trade has wisely recognised the danger of giving certificates to masters and mates without a clear proof of their freedom from this defect. Between May, 1877, and May, 1879, twenty-six candidates were proved to be colour-blind, and chiefly with regard to red and green. Mr. Gray, the energetic head of the Marine Department of the Board of Trade, contrived an ingenious optical instrument for testing this personal equation of seamen.

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But assuming that coloured ship lights be necessary, it would have been practicable to so arrange the apparatus as to make them approximately visible at the same distance as the bright light, so far as their elevation permitted. Three modes were available for effecting this. Each beam could be intensified over the 112½° arc by suitable condensing agents. Or an apparatus of greater radius could be used for the red light as compared with the white, and one of still greater for the green. Or, thirdly, retaining the equal size of all the apparatus, illuminants of greater initial intensity could be introduced into the coloured lights. In either way the power or luminous range of the three lights might be roughly equalised. But the obstacle of cost was, as it still is, a serious, if not a reasonable one.

The stipulation of one mile as the range for the anchor or riding light would seem inadequate at the present time when shore and pier lights of so much greater brightness than of old are in close proximity to a vessel anchored in the harbour; and when for a vessel anchored in the open sea, a wide range for her light is more and more essential.

It is not, however, so much by the two white lights, as by the two coloured lights, that the weakness of the system is manifested. To this I shall return presently.

The Admiralty and the Board of Trade having thus defined their requirements, the provision of ship lights was left to the ordinary channels of commercial supply. In England this meant, for a long while, that the outfitters who furnish everything a ship can need, from an emigrant's tin can to a Thomson's compass or a Dent's chronometer, should furnish her signal-lights; and naturally they could only offer the apparatus then manufactured for the purpose. Some of this was made up of common glass bent to a more or less accurate spherical shape—sections of a fish-globe, as it were. Much, again, consisted of so-called lenses, to which the name of *dioptric* was misapplied, of moulded or pressed flint glass rudely curved, and with various flutings and prismatic angles supposed to resemble the true lenticular glasses used in lighthouses. Specimens of such productions are on the table. One or two of the most fanciful are of American origin. A few apparatus were procurable of a better type. These were chiefly of French design,

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fairly well moulded, and in part ground or polished. On the other hand, many glasses were merely spherical lumps of grotesque thickness. Colour was generally introduced into the mixture or substance of the glass. The amount of interception and dispersion of light, more or less, but always constant in these hap-hazard productions, may be easily conceived. The glass was generally mounted in a thin brass or zinc lantern, in which was fitted a lamp with a flat or round wick, or with two such wicks, for burning oil.

Of course cheapness was the object in such arrangements, an object supposed to be of prime importance in the case of small vessels, although of very insignificant importance indeed to any vessel when rightly estimated with regard to her own value, the value of her freight, and above all, the value of her *human* freight. It is remarkable that this same economy of outlay has influenced our great railway companies, with their princely revenues, in the choice of the lenses for the signal-lights of the line, which are so essential for the safety of travellers. Lenses and lamps of much greater power are still urgently needed for the guidance of engine-drivers and guards of trains, and it is perfectly easy to obtain them either in England or in France.

The inadequacy of the ship-lights supplied to meet the statutory regulations soon became apparent to the Board of Trade, the authority charged with the supervision of vessels under the Merchant Shipping Act. What, indeed, could be expected of such apparatus when set to cope with seas not always calm, and skies not always clear? Far from doing their work at the prescribed ranges, they often could not be trusted for one-half or even one-fourth of the distance. The Board of Trade, as a means of developing improvement, promoted or conducted, in 1872, 1874, 1880, and, I think, other years, at Shoeburyness and Greenwich, a course of experiments and competitive trials with different sorts of ship-light apparatus. The best result was, that public attention was excited to the subject, although some improvement in the manufacture was doubtless effected.*

* "The side-lights are improved wonderfully lately under the pains taken by Mr. Gray, and you can see the side-lights for a far greater dis-

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The large mast-light on the table, by Harvie, of Glasgow, shows a considerable advance, although a very imperfect instrument. But in this country, at least, the great defect remained that the best lenses, the best lamps, and the best illuminant were not for many years brought into occasional use, and have never yet been brought into general use. In France, where, under the inspiration and impulse of the illustrious Fresnel, the dioptric system of lights had been originated in 1819, and where in the hands of Léonor Fresnel and Reynaud, and Allard, and Lepaute, and Sautter, it has attained a high degree of excellence, the lenses of ship-lights were successfully made both in moulded and polished glass and in sizes deemed suitable for the large and small vessels of the French merchant service and for ships of war. The moulded glass was of the improved sort introduced by M. Degrande. Some of the polished lenses were introduced into Great Britian, for the service steam yachts or tenders of the Northern Lighthouse Commissioners, the Trinity House, and the Mersey Docks Board. The side-lights of the steamer *Pharos* were fitted by Mr. Thomas Stevenson in 1866, with condensing lenticular apparatus mounted on gimbals and enclosed in small towers. Two of the "Anchor" line of steamers were similarly furnished in 1878.

But in general our Imperial and Mercantile Marine, while provided with so many of the resources of science, was destitute of the aid of science in this very essential particular. Such a condition of things could not endure. In a country where the dioptric system of Augustin Fresnel had been re-investigated, extended, and applied by such men as Thomas Stevenson, James Chance, James Douglass, and John Hopkinson; where the most striking specimens of light-house optical and mechanical work had been designed and con-

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tance than you used to do. But it is not always the case. There was a large steamer passed me when I was lying at anchor the other night, and with my naked eye I could not see her green light at all; I saw it with a glass, although she passed within four cables', length of me."—(Captain C. J. Weller's evidence before the Select Committee on Lights of Fishing Vessels, July 2nd, 1880, p. 123.)

Captain Weller stated that the side-lights in a vessel would not show much more than a mile.—*Ibid.*, p. 125.

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structed, it would indeed have been strange if lenticular ship-lights, relatively insignificant as to size, but absolutely important as to use, were omitted from the list of English Lighthouse apparatus. This consideration led Messrs. Chance of Birmingham, who have constructed so many of the great modern lights of our coasts, to the research of a single form of apparatus of adequate suitability. They chose a type of cylindrical lens, with a focal distance of 125 millimètres (4·92 inches), and with 6 elements of the height of 6·5 inches when set together. The refractive index of the glass is from 1·51 to 1·54, as for ordinary lighthouse purposes. A spherical silver-plated reflector is added for the side lights, which sends back 112½° of light through the flame, giving an important augmentation to the emerging beam. This lens may be mounted in a strong cylindrical copper lantern for all the lights, or in gimbals for the side-lights. A specimen of a lantern side-light is on the table, and side-lights in gimbals, with an anchor light and a foremast light are shown on the vertical stand. The anchor light of the regulations is excellently adapted for an "overtaken light" to be placed in the stern of the ship. This is another reason for making the anchor light as powerful as the foremast light.

Colza oil was at first used for these apparatus, but it was found after many experiments that, as in the case of larger lights, mineral was a preferable illuminant to vegetable oil, giving light in the proportion of about 9 to 8, and being cheaper in the ratio of about 3 to 1, while, with the same cotton wicks, the ignition was more rapid, and the maintenance of the proper flame more certain. The petroleum selected is known as "Young's No. 1," or "Young's Lighthouse Oil." It is used in nearly all the Trinity Lighthouses, except rock stations where the special arrangements for its storage are not yet complete. It has, according to the late Professor Valentin, a specific gravity of ·81, and a flashing point of 142° F. or 61° Centigrade. Our Admiralty, however, still hesitates, as do some foreign Governments, to adopt petroleum on board, from a belief of its dangerous character. Only the lapse of time can remove this prejudice, bringing the abundant experience of merchant vessels and of lighthouse authorities to illustrate the point. Meanwhile ships of war continue, I believe, to carry *gunpowder*. There

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is, however, a remarkable variety of petroleum called "mineral sperm," used by the Peninsular and Oriental Company in their signal-lights, and by several of the Atlantic Companies for other purposes. I do not know its composition exactly. It is not, I think, a mixture of mineral and animal oils. It is exceedingly well suited to a warm climate. I have proved the flashing point to be as high as 266° F., or 130 C.—300° F. is claimed for it. The cost is about twice that of the other oil, which, however, it excels, in light giving quality.

The burner selected as the most convenient for mineral oil is that well known as the *duplex*, having two parallel flat wicks each of 28 millimètres in width, first introduced by our townsmen, Messrs. Hinks. This form of wick, though not theoretically the best for lighthouse foci, is in practice very effective for small harbour lights and for ship lights. The intensity is of 25 standard candles, or 2·6 carcel *becs*, in the focus of a light. The consumption of fluid per hour is ·015 of a gallon, or about one quart in a winter night of eighteen hours, during which the lamp burns with a good flame without any re-trimming. A ruby glass chimney, or, which is preferable, a white chimney with a ruby shade, is used. There is but a minimum of risk in the burning and in the storage of such oils, if only moderate care be exercised.

The best manner for installing the side-lights is in the turrets which came into use about ten years ago, and which several leading ship companies have very wisely adopted. These are light iron or wooden structures, placed either near the bridge on the beam of the vessel, as in the *Gallia* of the Cunard Line, or more advantageously in the bow, and clear of all rigging, as in the *Valetta* and other new vessels of the P. and O. fleet. When the dioptric lights of the type now exhibited are installed in these turrets, there is fitted across the diameter of the turret a steel bar, to which a gimbal framing is attached, carrying the lens and the lamp, without any lantern-mounting. Specimens with petroleum lamps are shown on the stand. The light is thus always on a free axis, and its beam is directed in a level horizontal plane through a small plate-glass window over the 10 points required, with the least possible displacement by the ship's motion. With the flame of the duplex

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burner the vertical divergence is amply sufficient for the needs of navigation. A trimming-stage and a ladder accessible from the deck, or from below the deck, enable the attendant to light and observe his lamp in all weathers, free from the risks of extinction or damage by wind or water that await side-lights mounted like the specimen on the table, and fixed to the bridge of the vessel. And not only is the trimming and cleaning thus conveniently provided for, but the officers of the watch can inspect the lights thoroughly and easily at any moment during the night.

With a system of three apparatus acting together under these conditions, as on the stand, a ship's signal-lights are rendered much more effective than before. In the *Valetta* or the *Massilia*, the two newest vessels of the P. and O. Company, the centre of the turret side-light is elevated 25½ feet above the load water-line. This gives a geometrical range to the sea-horizon of about six nautical miles, or to the deck of a vessel fifteen feet above the water, of about 10½ miles, and the red light from the true lenses is certainly brightly visible in ordinary weather for one-third of that distance, the green light for its own proportionate distance. In the same vessels the white foremast light is placed 78 feet high, which gives a horizon of about 10 miles or 14½ miles to a vessel's deck, and the power of the light is sufficient for at least half of that range. So enamoured of these small apparatus is the Canadian Government, that it employs a great number of them as land lights for bays and harbours throughout the Dominion.

The author conducted certain experiments with the new signal-lights at Liverpool, in 1880, in fine weather, and was struck with their conspicuous power amid the numberless fixed and moving lights on the landing-stage and on the Mersey. In the same year he accompanied Admiral Ryder to Spithead, to ascertain the comparative merits of these and other lights. The steamer was stopped at intervals of half-a-mile for observation, the lights being placed on the shore conveniently for that purpose. The atmosphere was clear. One typical result was that at three miles the red light of the true lens was distinctly better than the white light of the best pseudo-lens; and another that at five miles the white light of the true lens exceeded by 2 to 1 that of the best pseudo-lens. All the

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other pseudo-lenses were invisible at five miles. Different experiments have given similar results, the Trinity House tests showing 2·6 to 1 as the ratio of the intensity of the true lens to that of the pseudo-lens.

Still, whatever may be the superiority of the true lenses and the petroleum lamps to the ruder forms of apparatus employed, the fact remains that, with the exception of the two or three lights which I have mentioned, designed ten years ago by Mr. Thomas Stevenson, no attempt, so far as I am aware, has been made to extend their usefulness by equalising the beams of the coloured and white lights.

It may be asked, what disadvantages attend the inequality of the luminous ranges of the ship-lights? Let us see. An officer on watch on a moving vessel observes a white light directly ahead, at a distance varying say from three to ten miles, according to the transparency of the air and the quality of the light. If he is sure as to his position and to the course he is keeping, he knows that this white light ahead is not that of a lighthouse, but is shown from a ship; and he soon further knows that it is not her riding or anchor light, but a steamer's foremast light. If the two vessels be at the moment seven miles apart, and are nearing each other at the same speed, say fourteen miles an hour, it would be perhaps ten minutes ere the red lights could be visible, and twelve minutes ere the green lights could be seen. In little more than three minutes after their green lights appear the vessels would meet. Now, the interval between sighting the mast-light and the coloured lights is too long, and the interval after sighting the coloured lights is far too short, for the proper handling of the ships. The appearance of the port light demands one kind of evolution, the appearance of the starboard light another. Consider how steamships crowd the seas, especially narrow seas, like the English Channel. It has been stated that from 200 to 300 pass Folkestone in the course of twenty-four hours.* Where not a steamer, but a sailing vessel, is being met which carries no white light, the inequality and inferiority of her side-lights are still more embarrassing. I have heard

* Select Committee on Lights for Fishing Vessels, 1880, p. 76.

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captains of ocean steamships complain in no measured terms both of the side-lights they must look for, and of the side-lights they must carry. The conditions are complicated and made worse when the fishing boats—trawlers and drifters—over 30,000 in number in our waters, have to be dealt with. These small vessels are, of course, bound to "wear," as it is termed, lights of some kind, and there has been a great controversy—the subject of several Parliamentary enquiries—as to the regulations most satisfactory both to the fishing vessels and to the Mercantile Marine. Strong opinions were expressed by nautical authorities, and they have been officially approved, that a white light should not be permitted to a fishing boat in motion, and that a steamship had no need to see the small boat's light—although she be bound to keep out of the small boat's way—further off than one mile. Therefore they have recommended coloured lights in various combinations; but the fishermen object, for their own sake, to carry coloured lights;* and, looking at what such lights are, I marvel that the navigators of large vessels should not agree with the fishermen. Their own anxieties must already be sufficient. They have at every moment of the night to be on the watch, to remember the written "rule of the road," and yet to act as the unforeseen may dictate. However numerous may be the white lights in the track of a steamer, it must surely be better to see them at a safe and certain distance, than to run the risk of not seeing the coloured lights until to avoid collision is most difficult if not impossible. Said a witness to the Fishing Vessels Committee, "Nobody can tell at how short a distance you can see these green and red lights."†

And if this be so in clear and calm weather, how much are the difficulties intensified by a storm, and by fog or haze which diminishes the best lights, and utterly quenches the worst! There is then often only the alternative to a captain of possible disaster by holding on his course, or of discredit to the ship and himself by creeping through the water and arriving out of date in port. It is fortunate, or rather it is a beneficence of natural law, that just when

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* See the Report of the Select Committee on Fishing Vessels (Regulations as to Lights), 1880, *passim*.

† Report, p. 107.

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*light* fails most, *sound* is best developed through the strata of a sea fog,* and the sound instruments and signals devised for use at sea—the United States deserves our warmest thanks for some of these—come to the rescue of our imperfect lights. If it were not so, calamitous indeed would be the annals of the deep.

The case, then for equal, or nearly equal, visibility of the three lights of a steamship, or of the two lights of a sailing vessel, appears very strong. The condensing expedient applied in the *Pharos*, which is one of those adopted in lighthouses, or else the enlargement of the side-light apparatus in two unequal dimensions, is open to the practical objections of costliness and weight. Our choice would seem to be better made in the direction of the illuminant, and if one can be found of a simple and trustworthy character, while of adequate intensity, it must be desirable to utilise it.

Electricity naturally suggests itself.† Electricity has already done admirable service in lighthouses. There are five first-class lights in England. There will soon be six or seven. Others are in Russia and Egypt, and the French Government, with the most praiseworthy spirit and intelligence, is converting all the sea lights on its coast to this system.‡ The most powerful electric light in

* Proved in the celebrated experiments of Dr. Tyndall, at the South Foreland, in 1874. Those of Professor Henry, however, are somewhat at variance with them.

† Major George Elliot, of the United States Lighthouse Board, in his valuable Report on European Lighthouse Establishments (1874), drew attention to the fact of the insufficiency of fog-signals and lights on over-sea steamers, and with a view to reform recommended the appointment of an International Commission which should also consider the question of using electricity in ship-lights (pp. 17, 271).

Mr. Richard A. Proctor writes, "I should have thought the owners of our best ocean steamships would long since have decided to use only the electric light for their signal lamps, if not for illuminating purposes throughout those ships."—*Knowledge*, Feb. 16th, 1883. He advocates the use of certain special electric light-signals, which, I fear, would prove too complicated for general acceptance.

‡ "La Commission des phares est d'avis : 1° De remplacer, dans les phares désignés par M. l'inspecteur général Allard, l'éclairage à l'huile minérale par l'éclairage, électrique, de manière à obtenir, sur tout le littoral de la France, une ceinture de protection de grands feux aussi complètement efficace pendant less $\frac{1}{4}\frac{9}{2}$ de l'année que l'est celle des feux actuels pendant la moitié seulement."—M. E. Allard, Mémore sur les Phares Electriques, p. 85.

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the world has been established but recently in New South Wales, to the boundless credit of the Premier colony.* Electricity has been tried, also for ship-lights. I do not know all the cases. The *Doric*, of the White Star Line, is one; the *Livadia*, the Czar's sumptuous but impracticable yacht, another (in 1880). No trial has been successful, for the arc is not adaptable to the purpose, and the *Livadia* was glad to employ the petroleum lamps sent with the lenses of the Messrs. Chance.† It occurred to the writer that the incandescent lamp, now become so perfect, might be applied with advantage to the coloured lights. His friend Dr. Hopkinson, who is the consulting engineer of the Edison Company in London, was good enough to arrange a lamp of 100 candle-power which could be placed in the focus of the port light. A sample of this lamp is on the table in two forms, the Edison type and the Swan type. I am sorry I cannot show you these incandescent lamps in action, as I have no means of obtaining a current here. Wherever the electric light is produced on board, the connection with the turret and the lens is most easy, and the working of it may be as regular and uninterrupted as can be desired. The condensed emerging beam from the lens with the duplex petroleum burner is equal to about 115 standard candles. With the incandescent lamp it is about 460 candles. But the red shade reduces this in a very large proportion. The experiments as to loss of light by colour have yielded various results owing to the differences in the tint, thickness, and composition of the glasses employed, in the condition of the atmosphere, and in the personal equation of the observers. The conclusions of M. Allard show a greater loss than those of M. Reynaud, and both vary somewhat from those established in England. With a red plate of the tint before you, which is the standard of the Trinity House, the proportion is about as 3½ to 1—that is, three-and-a-half

* It is remarkable that the first lighthouse in Australia, the Macquarie (1816), has been endowed with the first electric light (1883).

† In the *Nautical Magazine* of 1875, p. 172, it was suggested that "the side-lights might be electric instead of oil, and the difficulties of range and uniformity thus overcome." It was also suggested that a green light should be produced by an electric apparatus "by using copper and charcoal points."

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times as much light would be needed to exalt the red beam to equal intensity with the white beam. This would leave to the electric port light a value of about 130 candles. As regards green, the proportion is again unsettled. Allard gives it as 8 to 1 for blue-green glass. I prefer to take it as 7. This would exact an incandescent lamp of about 200 candles for the starboard light, to ensure equality with the red light.

In this condition the two coloured electric lights would act to a far greater extent than before in harmony with the white light (which, of course, would be left a petroleum light), because in ordinary weather the full range due to their elevation would be secured. In hazy weather, although the range is enormously diminished, the quintessence of value is in the residuum. In *very* thick weather no light can be expected to avail much, not even the new Eddystone with its beam of 160,000 candles, or the electric Lizard, though its light has been seen by the P. and O. ship *Khedive* seven miles distant *in a fog*, or the Macquarie with its beam of perhaps seven millions of candles, casting a halo on the sky visible sixty miles away; for as Tyndall puts it, the noonday sun itself may be eclipsed by a puff of smoke from a locomotive. The whole question of luminous sea-signals is one of *degree*—a very slight increase of penetrating power in misty weather making the difference possibly between shipwreck and salvation to a mariner, whether the radiant be in a lighthouse or in a ship-light. It is truly in light as in love—

> "Oh, the little more, and how much it is!
> And the little less, and what worlds away!"

An exhibition of the new ship-lights with the incandescent lamp was held in London on two evenings in February last, in the presence of representatives of the Board of Trade, the Admiralty, and the Trinity House, at the Engineering Works of Mr. Peter Brotherhood, near Westminster Bridge—works, let me say, in themselves an admirable exhibition of structural arrangement and mechanical outfit. Such powerful beams of light were probably never before this occasion darted across the Thames from such small apparatus.

This, then, is the case for the new lenses. Have they any weak



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points? (1.) They are costly in comparison with the pseudo-lenses, and the electric illuminant may make them more costly still. But what sort of factor is this in a calculation where the values which they help to protect are so immense? (2.) They are liable to damage. Doubtless, and so are many other things on board that must be carefully tended. (3.) If the incandescent lamp be used it may go out. Unquestionably, and every artificial light goes out now and then, but if a duplex burner be kept at hand ready to be put in focus, the accident can be repaired in less than half a minute.* (4.) These lights can be obtained only in Birmingham. Not so; they can be obtained in Paris of excellent quality, and the French Government seems to appreciate their value somewhat better than ours does. (5.) Petroleum on board ship may explode. True, in the hands of a miscreant to whom dynamite is denied, and even *he* would have some trouble to succeed. Lastly the new lenses give too much light. To *that* I really have no answer. "You are ten years before the time with your electric side-lights," said one of our greatest lighthouse authorities to me the other day. Well, I am content to be so. I fail to see why we already use in our war ships the dioptric lenses and the electric light for purposes tending to destroy life, and do not use the same agencies there and in other ships for the purpose of saving life. And equally I fail to understand why thousands of pounds should be lavished on the decorations and luxuries of a vessel (including electric light in abundance), while a few pounds are grudged for the signal-lamps which promote the quiet and safe enjoyment of all these. The incandescent light is now installed in the saloons of more than sixty of our ocean steamships. To extend it to the coloured side-lights, and secure twelve times the power of the old lights, seems an obvious measure. But even where vegetable oil or petroleum is the aliment of the side-lights for the present, there can be no sound reason for not using the best lenticular apparatus procurable, and so securing three times the power of the old lights. It reads almost like a bad pleasantry that the magnificent Australian

* Sir James Douglass, in 1881, without any practice, made with the stand-by gas lamp in the great electric light for Macquarie the change from electricity to gas in ten seconds.

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steamer *Orient* on leaving our shores for her first voyage was "protected in every conceivable manner against accidents by collision,"* when we know that she carried only lights of the still imperfect type to mark her career through 11,000 miles of water in thirty-six days. So it is with the great Atlantic steamers such as the *Alaska* the *City of Rome*, the *Germanic*, or the *City of Berlin*. The inaction of many shipowners is singular. They desire that the Board of Trade should take the initiative in enforcing the use of dioptric apparatus, or of the electric light, or at least in recommending it. On its side the Board of Trade naturally prefers that the companies should begin the reform for themselves. It is the old appeal "*Ætio ter Consuli.*"† But the public who are the real appellants, will not, I imagine, when better instructed on the question, submit indefinitely to this vicious circle. And the companies ere long will discover that the line will become most popular which carries, *inter alia*, the most powerful and trustworthy signal-lights. There is already one renowned line of steamers which in this, as in so many other things, has taken an honourable lead—the Peninsular and Oriental Company. Despite some early discouragements the use of the true dioptric apparatus with the petroleum lamp is becoming the rule of their vessels now. They still hesitate, I believe, to invoke the aid of electricity in the side-lights; but with a chairman like Mr. Sutherland, and with the professional staff advising him, this crowning improvement must soon follow.

In the House of Commons, February 13, 1873, just after the calamity of the *Northfleet*, Mr. Chichester Fortescue, then President of the Board of Trade, spoke with emphasis on the necessity of better lights for vessels, and said that the Marine Department of the Board was working hard in that direction. Sir Charles Adderley, in 1875, promoted several enquiries with the same end. May we hope that the President of to-day will not regard this end as unworthy of his benevolent impulses, or unattainable by his steadfast will?

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* Report in *Daily Telegraph*, Sept. 15th, 1879.

† Bede., *lib.* 1, *cap.* 13



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## RUSSIAN MARITIME LAW.

HAVING regard to the large amount of trade that exists between Great Britain and Russia, and to the somewhat peculiar laws of the latter State on the subject of navigation, and also seeing that no inconsiderable number of British subjects take service in Russian vessels, especially as engineers, who are probably not aware of all the legal consequences therein involved, the editor of the *Nautical* has thought that the interest of the subject will be sufficient excuse for presenting to its readers a translation of the Russian Maritime Code, as corrected up to 1883. So far as he is aware there is no English translation extant, and the latest one into German bears the date A.D. 1851, and is, therefore, in many respects obsolete, and moreover is at the present time out of print.

The present translation has been rendered literally by Mr. W. H. Cromie, Assistant to the Librarian, Intelligence Department, W. O., and is edited by a barrister whose special acquaintance with seafaring matters has already made him a frequent contributor to these pages.

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[IT is hoped that the present edition of the Russian Code of Maritime Law may be found useful. It is in some respects similar to our own Law of Merchant Shipping, notably in the way in which it has been gradually amended to suit special cases and difficulties as they have arisen, and from the fact that "case law" becomes for practical purposes incorporated in it. Several decisions will be found attached to various articles in the present translation, and are published as integral parts of the Russian Code. From the fact of there being no distinct legislative body as distinguished from the Administration, and that therefore those who make the laws interpret them in the last result, it is clear that decisions on a section are of equal force with the section itself.

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The story of the origin of the Commercial Code, even if not strictly accurate is "*ben trovato*," and by way of an amusing introduction to a dry subject may be told here.

Shortly after the beautifully precise French Code of Commerce had been given to France and the World, under the auspices of the great Napoleon, it came to the knowledge of the Czar of all the Russias that such a work had appeared, and to him it seemed monstrous that Russia should be behindhand in having a Commercial Code, if Commercial Codes were good things; he therefore issued orders to the Minister of Justice to draw up one, and submit it to him for approval in three months. The Minister of War was a general, and no doubt distinguished in arms, but profoundly ignorant both of law and commerce, probably despising both. However, his master's orders must be obeyed, and to carry them out, he hit on the ingenious expedient of laying the hands of justice (?) on some sixty persons of the merchant class, and locking them up, with the pleasant alternative of producing a code of the laws and customs in six weeks, or going to Siberia at the end of that time. The merchants, or what we should call small shopkeepers, or hucksters, were most of them unable to read or write, and were in despair, when after a while a deliverer appeared in the shape of a young *employé* of the Ministry of Justice, who offered to prepare the Code for a consideration. His offer was at once accepted with acclamation, and he, with some knowledge of the French language, and also being acquainted with Russian manners and customs, very soon had the French Code disguised in a Russian dress, which was presented by the merchants to the Minister of Justice, and by him to the Czar, within the prescribed time, and by him decreed as law. Probably no translation was ever paid for at a higher price. Certainly the young clerk thereafter rose to a position of the highest eminence in the Russian service.

Of course the conditions of society in Russia differing from those which existed in France when the Code was published, rendered it necessary to make a very free adaptation of the French Code in many particulars; for example, the existence of the orders or

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classes of the nobles, merchants, and serfs was hardly compatible with *Liberté*, *Egalité*, and *Fraternité*, and throughout the Russian Code, even in the most recent corrections, various traces will be observed of these class distinctions, even though serfdom has been abolished as an institution for a quarter of a century. The parts of the Code which, perhaps, call for the most attention, in consequence of their divergence from the laws on the same subjects of the rest of Europe, are those concerning the more than paternal authority which a shipmaster has over his crew, the curious agreements between the owners of two or more ships for mutual protection, and the very minute regulations concerning the onus of blame in case of collision, and the distribution of salvage in case of wreck.

The Maritime Laws here translated form Book III. of the Commercial Code.

The first chapter of the Book, which of necessity must appear first, is unfortunately of perhaps less general interest than any other part.—ED.]

## THE COMMERCIAL CODE OF RUSSIA.

### BOOK III.

*Of Contracts and Obligations Specially Relating to Mercantile Shipbuilding and Navigation.*

### PART I.

*Of Contracts and Obligations Specially Relating to Mercantile Shipbuilding.*

### CHAPTER I.

*On the Building, Licensing, and Fitting-out of Merchant Vessels.*

#### SECTION I.

*On the Law of Shipbuilding.*

779. Everyone, without exception in favour of any class, is permitted to build, fit-out, or repair sea-going or river vessels, large or small, wherever he chooses.

Note.—The rules concerning the building and purchase of vessels by the members of the Imperial St. Petersburg Yacht Club are contained in the regulations of the club.

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780. All classes of Russian subjects, and also companies and trading corporations, are permitted to establish on their own property on (the shores of) seas, lakes, and navigable rivers, private dockyards for building ships.

Note (Supt. of 1876).—The establishment of private dockyards for building vessels, as well as for the construction, repair, and docking river, lake, or sea vessels of all sorts, with the exception, however, of steamboats for the conveyance of goods and passengers, belongs to the category of trade operations freely permitted to all classes, not even excepting foreigners, without payment of tax. This note also relates to Articles 783 and 785.

781. Mercantile dockyards, whether private or belonging to Companies or the State, are under the supervision of the Minister of Finance.

782. Governors of Provinces and [nachalniki] local authorities will, as far as possible, further the interests of companies' and private dockyards, not interfering, however, with the interior arrangements of the dockyards or construction of vessels.

783. The construction of sea-going vessels is permitted to all classes of Russian subjects, without (necessitating their) inscription in the trade categories. (See note to Art. 780.)

Note 1.—For the greater encouragement of mercantile shipbuilding on the Black Sea and Sea of Azov, a certain sum is placed at the disposal of the Governor-General of New Russia, to be distributed as loans, with this object, with security for repayment. These loans are permitted on the following conditions:—During the building of vessels for the navigation *of the Black Sea*, an advance is made on oak boats at the rate of thirty silver roubles; on boats of oak and pine, at the rate of twenty-one silver roubles; and of pine only, at the rate of fifteen silver roubles per last [4,320 lbs. approx.] carried by the boat; on boats when built, at the rate of seven silver roubles fifty copecks per last for the completion of the masts, rigging, and other details. All such advances are made for three years at the rate of 6 per cent., but on condition that one-third of the time for the return of the capital borrowed should be without payment of interest; as a guarantee, certain pledges are accepted and also the security of not less than two persons whose solvency shall be attested, if the borrower is a noble, by the chief of the nobility of the (*uyezd*) district, and if of the middle class, by a (*gorodovoy magistrat*) town magistrate. In case of irregular payment of the loan, the property of the borrower and bailsmen shall come under the regulations as laid down in the law of debt. For the encouragement of the building of coast-

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ing vessels *for the Sea of Asov*, loans are issued to persons building not only one, but two or three, coasting vessels, at the rate of one thousand two hundred silver roubles on each vessel for four years without interest, under (condition of giving) solvent security and with an engagement to build the vessel within the first two years; should this engagement not be fulfilled, payment of the loan is demanded with interest and a fine of sixty silver roubles. Only such persons as consent to build vessels on the lines laid down by the Black Sea authorities are eligible for these loans. (See note to Art. 170.)

Note 2.—By a special decision of the Ministry of Finances, Russian subjects building vessels on their own account in Russian dockyards import from abroad free of duty the metallic boat fittings necessary for their equipment.

Note 3.—The office of New Russian and Bessarabian Governor-General is suppressed, and his rights and duties connected with the administration of the New Russian (*Kray*) region and government of Bessarabia are transferred to the local governors and (*gradonachalniki*) governors of towns, according to circumstances, or to the Ministry of the Interior. This note also relates to Art. 860 (App. Art. 6 and Note, and 23), 861, and App. Arts. 1 and 2, 170. Note (Supt. of 1876). On the suppression of the magistrates and (*sudebniya ratushi*) town-hall courts in governments administered according to the general establishment, the judicial affairs, criminal and civil, awaiting their judgment, were brought under the jurisdiction of (*uyezdniye suda*) courts. In localities where the judicial code has been brought into operation and there are no commercial courts, the above mentioned affairs are conducted on the bases laid down in the judicial code.

## SECTION II.

### *On the Plans, Dimensions, and Materials for Trading Vessels.*

784. Vessels used for the conveyance of goods in the interior of the empire should correspond with the depth of rivers and size of canals. Generally river, as well as sea-going vessels, should be of a simple and convenient form.

Note (Supt. of 1876).—It is obligatory on all owners of vessels and masters bringing vessels into Russian ports to have on their stern-posts metal or other marks denoting the draught of the vessel in Russian or foreign feet, or in metres, and, for clearness, painted in bright oil colours. In case of not showing such measures at all, or of their incorrect indication, should the error exceed a quarter of an inch to each foot of actual immersion of the stern-post, a fine is imposed on the master and owner each time, of ten roubles per vessel.

785. Owners of vessels, being Russian subjects, are granted

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liberty to build sea-going vessels on their own designs; but it is desirable that they should submit them for examination and approval—in St. Petersburg, to the Department of Manufactures and Interior Trade; in Archangel, Kherson and Astrakhan, to the authorities of the office of Marine Customs. See note to Art. 768 and 780.

Note.—As a guarantee of the proper construction of craft, the Ministry of Marine is commissioned, through the naval engineers, to draw up designs, with detailed dimensions of the necessary timber for trading boats of various sizes and sorts, and other sea-going and coasting vessels, estimating for as many as sixty different models. In case of the invention of a new method of constructing sea-going and coasting vessels, the Ministry of Marine is obliged to furnish the design of such new method to the Ministry of Finance, [and] the Minister of Finance takes measures for the printing of such designs at the expense of the Treasury, and their sale at a moderate price.

768. Note (Supt. of 1876).—The Department of Manufactures and Interior Trade is altered into the Department of Trade and Manufactures, and the Department of Exterior Trade into the Department of Customs; hence the section for exterior trade relations is added to the Department of Trade and Manufactures, with the exception of that part of it which particularly relates to customs and quarantine administration and the business of administration of exchanges and supervision of the sorting of goods.

786. In the case of any new invention in the construction of sea-going and river vessels deserving a preference over anterior ones, the inventor, master,* or owner, who desires to make use of such invention must, in the first instance, deposit a plan of it in the establishment of the Admiralty authorities.

787. It is permitted to use timber from the State lands for the construction of river and sea-going vessels, by permission of the forest authorities, on the basis of the regulations given in detail in the Forest Code.

## SECTION III.

*On the Selection of Naval Artificers and the Rigging of Vessels.*

788. Anyone wishing to build sea-going vessels may, according to his own judgment and credit, select free artificers for a stipulated

[* *Master*—chief workman.—W. H. C.]

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payment, engaging or importing foreigners, in case of an insufficiency of such artificers among Russian subjects.

789. Should the owner wish to have, for the construction of sea-going vessels, naval engineers of the fleet, with a certain number of the ranks of the naval shipbuilding* corps, he may apply to the naval authorities, who will comply with such demands as far as possible.

790. The rigging or equipment of sea-going and coasting merchant vessels is left to the discretion of the owners; but it is desirable that a demand should be sent in to authorities of the State mercantile dockyards, where such exist, who for that purpose will immediately send competent officials under their charge, with the necessary number of workmen, should there be such in the dockyard.

791. An owner is also permitted to ask for competent naval officials, with a certain number of the ship-building corps, to fit out a sea-going or coasting vessel belonging to him, and the naval authorities will satisfy such demands as far as possible.

792. Every owner of a ship or sea-going vessel ought to have a deed of ownership [kriepost] for it. A deed of ownership for a vessel is a written document, establishing the property of the owner of it; in it is shown:—(1) the measurement of the ship or vessel; (2) the amount of its carrying capacity; (3) the time and place of construction, *i.e.*, where, in what year and month it was completed; (4) of what wood it is built; (5) the description of the ship or vessel, as brigantine, galliot, barge, or other designation; (6) who is the builder and what the sum paid the builder for the construction of the craft or vessel.

Note (Supt. of 1881).—The capacity of merchant vessels in Russia is defined by the certificates of measurement, issued to owners and masters, in accordance with the regulations contained in the Appendix to Art. 798 (Supt. to this edition). This note also relates to Art. 839 (App. I., Art. 5 para. 3) (Supt. of 1876).

The appendices to which reference is made in the text or notes will be printed at the end of the Code.

[* Morskie rabotchie equipaji, naval working crews, are part of the port companies of the fleet, and may be translated "shipwrights," or "dockyard artificers." *See* following arts.—W. H. C.]

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A lighter containing less than ten lasts, is not of the class of sea-going vessels, for the acquisition of which the execution of a special deed of ownership is always required. (Decisions of the civil section of the (Kassatsionnye Departamenty) Cassation Departments, 1871, No. 975.)

793 (Supt. of 1876.) A deed of ownership for a vessel is signed by the constructor who built it, and two witnesses, and is liable to stamp duty. (Tax Regns., Art. 2, app. supt.)

794. For the greater convenience of builders the issue of deeds of ownership for sea-going vessels is imposed on magistrates or (*ratushi*) Town Hall Courts in those towns where the vessels were built. On proof of the actual construction of the vessel from crown wood a billet [license, ticket] given under the Forest Department is taken out. *See* note to Art. 170 [ante].

795. On the issue of marine deeds of ownership only the established office charge for the execution of the deed, at the rate of three silver roubles, is demanded.

796. (Supt. of 1876.) On the issue of licenses or deeds of ownership for the authorised construction in Russia of vessels built to the order of foreigners, no duty is demanded except the stamp duty.

797. The sums received for the execution of deeds is as a general rule paid into the (*uyezd*) district treasury.

Note. (Supt. of 1876.)—The (*uyezd*) district treasury is in government towns [*i.e.*, capitals of governments or provinces] changed to the government treasury, and in certain localities exchequer sections are established.

## SECTION IV.

### *On the Licensing of Sea-going Trading Vessels.*

798. (Supt. of 1881.) The measurement of the capacity of merchant vessels in Russia is carried out according to the rules appended to this [Art.].

For this Appendix see end of Code.

799-800. (Supt. of 1881.)—Are altered by the rules shown above in Art. 798.

## CHAPTER II.

### *On the Purchase and Sale of Merchant Vessels.*

801. Everyone has the right to buy and sell sea-going vessels built in Russia, in the manner established by law within the empire.

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802. (Supt. of 1876.) The purchase of foreign vessels is permitted to persons of all classes.

803. (Supt. of 1876.) On the sale of a sea-going vessel the documents belonging to it are given to the purchaser, viz.: marine deed of ownership, patent [license] for navigation under the Russian flag, list of the crew (*sudovaya rol*), and custom-house passport. But if a vessel, furnished with a license to hoist the Russian flag, enters into the possession of a person not having the right to hoist this flag, all the documents, for the avoidance of abuses, must be returned to the competent department of the Ministry of Finances, and the license is returned, for destruction, to the custom-house of that port in which the vessel is registered.

The right of property in a vessel is only transferred on the delivery to the purchaser of the regular marine documents. (Decisions of the (*Pravitelstvuyushtchy Senat*) Directing Senate, 1874, May 7, in the case of Dovelman, Nesenko's Collection, Vol. I., Part 2.)

804. (Supt. of 1876.) On all ranks and persons executing or witnessing deeds of sale of sea-going vessels furnished with licenses to hoist the Russian flag, is imposed the invariable obligation to observe that, on their sale to persons not having the right to hoist this flag, the document of property in the vessel be not given to the purchaser before demanding from this latter or the seller the production of the Russian documents belonging to the vessel, which should be sent into the custom-house of the port where the vessel was sold; the license should be returned to the custom-house of the port where the vessel was built.

805. (Supt. of 1876.) On all ranks and persons executing or witnessing deeds of sale of vessels is imposed as an invariable obligation, on the execution of the deed of sale of foreign vessels to persons having the right of hoisting the Russian mercantile flag, not to give to the purchasers the documents for the right of possession of such vessels before making an endorsement on the foreign documents belonging to the vessels, concerning the time of sale, with an indication of the name of the former and new owner.

806. On the sale of vessels between Russian subjects new deeds of ownership are not executed, but the original deed of ownership, executed on the construction of the vessel, with an endorsement

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by the seller, explaining by whom, to whom, when, and for what sum the vessel was sold, is given to purchaser with the other shipping documents. This entry, if the sale is conducted in Russia, is witnessed at the brokers, with a fixed payment for the registration of the deed of three silver roubles. If the vessel is sold in a foreign port it is verified by the Russian Consul. In neither case is the 1 per cent. duty on the selling price of the vessel demanded. See note to Art. 203.

Note 1. (Supt. of 1876.)—The 1 per cent. duty which was demanded on the sale to Russian subjects, or a foreigner living in Russia, or inscribed in a Russian trading class, of a foreign vessel by a foreigner, is abolished. This note also relates to Art. 807.

Note 2. (Supt. of 1876.)—In case of the transfer of a Russian sea-going vessel from one person to another, the order laid down in Art. 839 (App. Art. 12, Supt.) is observed.

203. Note.—In those localities where the regulations concerning notaries (Civil Code, Art. 708, Note 2, App. Supt.) have been introduced, all former notaries and brokers, except stock [bourse] notaries and brokers (*hof-makler*), *Government brokers* (*a*), ship and marine insurance brokers, corporation [of trades] brokers and brokers of the (*remeslennaya uprava*) tribunals of artisans in both capitals and the town of Odessa are relieved from the further exercise of their functions.

807. If a Russian subject, or foreigner living in Russia, or inscribed in a Russian trading class, buy a foreign vessel from a foreigner, a deed of ownership is drawn up on a paper stamped with the proper stamp, according to the price of the vessels purchased, declared on conscience by the buyer or seller, and, in addition to the three silver roubles for the registration of the deed, a one per cent. tax is levied. But if a Russian subject, having bought a foreign vessel, sell it to another Russian subject or to a foreigner, the one per cent. tax is not levied, and the sale is completed between Russian subjects on the basis of the foregoing Art. 806, and between a Russian subject and a foreigner on the basis of the following Art. 808. See note to Art. 203 and note 1 to Art. 806.

808. (Supt. of 1876.) If a Russian vessel be sold to a foreigner,

(*a*) See Art. 2,526. An hof-makler is a broker specially selected by the Government to do Government business, but allowed at the same time to act as broker for private persons.

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all the documents of the vessel which is sold are collected to be sent to the proper persons [*à qui de droit*] (see Art. 803 Supt.), and to the purchaser is given a new deed of ownership in conformity with the rules laid down in the Tax Regulations (Art. 2 App. Supt.); in default of Russian stamped paper abroad, in case of the sale of Russian vessels there, the Consul is allowed to issue and witness deeds on plain paper, demanding the stamp duty in ready money.

809. (Supt. of 1876.) Custom-house officers will not allow sea-going vessels, furnished with licenses for sailing under the Russian flag, but in the possession of persons not having the right to hoist this flag, to sail until they have received from the purchaser all the ship's papers in their possession.

810. Vessels built in Russia may be sold in foreign ports to Russian subjects as well as to foreigners.

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## COLLISIONS OF STEAMERS IN FOGS.

THE following preliminary report has been drawn up by Admiral A. P. Ryder, Chairman of the Committee of the Society of Arts on Collisions in Fogs, for the consideration of that Committee:—

*To the Council of the Society of Arts.*

1. This Committee was appointed by the Council on March 12th, 1883, to consider the question of collisions at sea. On further consideration it was determined that the work of the Committee should be confined to the question of collisions in *fogs*. The first action of the Committee was to insert a notice in the Society's *Journal*, inviting communications and suggestions from persons interested in the subject. In response to this notice they have received sixty-nine communications. A summary of all these will be given as an appendix to the final Report. The Committee feel much indebted to the many gentlemen who have submitted these suggestions, but they do not consider themselves in a position to

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recommend any one of the systems described in preference to the others.

2. Nearly all the methods proposed assume the desirability of a code, international or not, of fog-signals, and in many of the inventions great ingenuity has been displayed. Supposing the objections to an elaborate code to be got over, there can be little doubt that several of the systems proposed would be very well adapted for the purposes required. The Committee, however, after giving special attention to the question of an international code of fog-signals, have come to the conclusion that the introduction of an international code for use by merchant ships would be more likely to cause confusion or disaster than to conduce to safety, first, because the difficulty of making intelligible signals in a fog is very great; and, secondly, because it is to be feared that the authorisation of such a code would foster a fancied feeling of security, and encourage the practice of steaming at high speed under dangerous circumstances. The Committee believe that the utmost that could be done would be an indication of the direction of the ship's head as regards the vessel she is signalling to, as proposed by Mr. Rothery; and, in crowded channels, the indication by steamers of the fact that they were outward or homeward bound. At the same time the Committee are fully sensible of the desirability of increasing by all possible means the power of fog-horns, and the general adoption of some form of "siren" (an improved steam-whistle) for use on board ship.

3. The Committee on Collisions in Fogs has confined its attention, in this preliminary report, to collisions of *steamers* in fogs. The Committee has examined orally, and by aid of printed questions widely distributed, a considerable number of witnesses, including shipowners, officers of the Royal Navy, and of the merchant service.

4. It has been the Committee's aim, among other important questions, to ascertain what is the general practice in *steamers*, including both men-of-war and merchant ships, as to the *very* important question of the *speeds* maintained by steamers during fogs, both in the *open ocean* and in *narrow waters*.

5. The law laid down in the International Regulations for Pre-

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venting Collisions at Seas,* is that every ship shall in a fog go at "moderate speed."† The Committee has no doubt, judging by the evidence, that the illegal practice, pursued by many steamers, of proceeding in fogs at speeds other than "moderate," is not only very common in the merchant service, both in the "open ocean" and in "narrow waters," but is the almost invariable practice in the "open ocean" by many of the most important lines of steamers.

6. The Committee has no reason to doubt that the "law" is fairly well observed in vessels of war. The Naval Regulations prescribe *four knots* as the speed of vessels in a fog in a fleet, and this appears to be rarely exceeded in fleets. In single ships-of-war the assumed urgency of the sailing orders would probably in some cases lead to the speed being in excess of a "moderate" speed, but the International Regulations are as binding on captains of men-of-war as on the captains of merchant ships, and damages have been recovered in the same way from captains of men-of-war as from the captains or owners of merchant ships.

7. In a great deal of the evidence the Committee has obtained from captains of merchant vessels, the witnesses have not hesitated to state plainly to the following effect, viz., that the practice of proceeding in fogs at speeds other than "moderate" is very common, if not universal, in the *open ocean*, in the principal lines of steamers. This evidence has been given to the Committee on the understanding that the names of the witnesses should not be disclosed.

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* The Regulations for Preventing Collisions at Sea have been prepared by the English Government, and submitted to all foreign mercantile nations and adopted by twenty-eight of them, and thus made international. These nations are:—Austria-Hungary, Belgium, Brazil, Chili, Cochin, Denmark, Ecuador, France, Germany, Great Britain, Greece, Hawai, Italy, Japan, Kattywar, Khelat, Kutch, Netherlands, Muscat, Norway, Portugal, Russia, Spain, Sweden, Travancore, Turkey, United States, Zanzibar. These Regulations can be obtained of J. D. Potter, 31, Poultry; and of E. Stanford, 55, Charing Cross, for twopence.

† Art. 13 urges that "every ship, whether a sailing ship, or steamship, shall, in fog, mist, or falling snow, go at a moderate speed."

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8. The readers of this report must, therefore, take the above statement on trust, as also that evidence has been invited and obtained from officers of the principal lines of steam-packets, with consent of the directors or owners.

9. The question that the Committee had to determine, so soon as it arrived at the conclusion that many of its witnesses were confessedly engaged in deliberately and frequently breaking the law, is not a little embarrassing. It appeared to the Committee that the question submitted to them had now assumed a very grave aspect, and that it might be well to record all the circumstances of the case in a *preliminary* report, and place it before the Council of the Society of Arts, for their decision as to the further pursuit of the inquiry by this Committee; or, whether, after careful consideration, it may not be better that such an important inquiry be transferred to some official body clothed with wider powers, and enabled to examine witnesses on oath.

10. If loss of life were caused by a collision of ships in a fog, and was followed by a civil action, and it was proved that one or other of the captains was driving his vessel at a speed other than "moderate," it would be open to the jury to bring in a verdict of manslaughter against the captain. The Courts that take cognisance of collisions are given below.*

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* The proceedings in collision cases are as follows:—

A quasi-*Criminal* proceeding in the Wreck Commission Court, in which the question to be decided is whether the master or officers of one or both ships were to blame, and whether it would be proper, under the circumstances, to suspend or cancel their certificates."

2. A purely *Civil* proceeding in the Admiralty Division of the High Court, before the Judge and two Assessors, as to which vessel was in fault, and by which of them the damage should be paid.

3. A purely *Civil* proceeding before any of the Judges of the High Court, and a jury, to decide precisely the same question.

4. A *Criminal* proceeding before a Judge and jury, to determine whether the master or officers, whose conduct is impugned, shall be punished criminally.

In the *first* of these cases, there is an appeal to a Divisional Court, thence to the Lords Justices. In the *second* and *third* there is an appeal to the Court of Appeal (with sometimes an intermediate hearing before the Divisional Court), and, finally, all three to the House of Lords. In the *fourth* case, the criminal trial, there is an appeal, only in certain cases, to the Court of Criminal Appeal. The findings in all the Courts may differ.



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11. The Committee has no reason to doubt, after receiving the evidence alluded to above, that numerous vessels belonging to some of the most important steamship companies—ships of great value, crowded with passengers—are daily and hourly being driven through fogs in the open ocean, by captains who are knowingly breaking the law, and in danger of the above punishment. Now if the "law" is a wise one, or, in other words, if "moderate" speed in a fog be the safest to all concerned, and if speed other than moderate be dangerous, these captains are wrongly imperilling the lives of their passengers and crews, and should be restrained in so doing.

12. It is evident that even the fear of the penalties incurred for manslaughter, when added to other punishments, such as forfeiture of "certificate," loss of position, &c., has no sufficient deterrent effect in this case. Whether the captains referred to share the opinion of the law-makers, that there is more danger of collision, and from collision, when going *fast*—or rather at speed other than "moderate"—in a fog than there is when going at "moderate" speed; or, on the other hand, entertain the opinion that there is more safety in going at a higher speed than "moderate," their practice appears to be the same.

But even in the former case, viz., in that of captains whose opinion (as seamen) is in favour, as a matter of prudence—of prudence apart from law—of limiting their speed to "moderate" in a fog, other considerations step in—the *requirements of the Post Office*, the *passengers' anxiety for a quick passage*, the *desire of the owners of the cargo for quick transit*, or the *owners' wishes;* and full speed in fogs in the open ocean is the rule, moderate speed the exception.

For whatever reason, the practice appears to be almost universal to break the law, and maintain full speed in fogs in the *open ocean*. Is this satisfactory? The Committee is unanimous in opinion that it is not satisfactory.

13. Three courses appear to be open to the Legislature, if the evidence this Committee has received is confirmed on oath.

(*a*) To preserve the "*status quo*."

(*b*) To make the punishment for infringement of the law more

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stringent and deterrent, and define more clearly the word "moderate;" as, for instance, say, not exceeding 6 *knots*, or the lowest speed at which steerage-way can be maintained, if in any case that speed be more then 6 knots.

(*c*) To alter the law, and free the captains from the existing obligation to lower the speed to "*moderate*" in *fogs* on the *open ocean;* leaving the existing law applicable to ships in "*narrow waters.*" N.B.—The latter expression is defined further on.

14. The Committee need hardly say that there are difficulties surrounding each of these courses—it is, and must be a choice of evils—and in the Committee's opinion it will be well that this, their *preliminary* report, should be submitted to the Admiralty, to the Board of Trade, and be made public. So that, after the question has been well ventilated, it may be re-approached either by this Committee or by some other body.

15. The Committee do not hesitate to say, however, that they are unanimously of opinion that to adopt the *first* course, the "*status quo*," would be most objectionable; and that without giving any positive opinion at present, they are more in favour of the *third* course than of the *second*, and see no fatal objection to certain large open portions of the ocean being defined in the new Regulations, say all positions outside 50 miles distance from land, as by implication exempt from the obligation on steamers in such positions to go at moderate speed in fogs. N.B.—The distance, whether 50 miles or more, is a detail, but requires careful consideration. Any land such as the Madeira, Azores, &c., would be protected by a 50-mile limit, within which the privileges of "open ocean" should not extend.

16. There are objections of course to such a modification of the existing law; but the proposal, in the opinion of the Committee, without binding themselves to its approval, is well deserving of consideration by shipowners, seamen, &c. Large tracts of the ocean would be, so to say, privileged in fogs as "open ocean," and in much smaller tracts, under the designation of "narrow waters," ships would be protected from vessels at "immoderate" speeds. Its effect on the navigation of steam-vessels



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would probably be this, that captains on passing in fogs from "open ocean" to "narrow waters," or in other words when within fifty miles from land, would either comply with the law, and proceed at "moderate" speed, or would redouble their precautions and multiply their "look-outs;" for if they did not comply with the law, and there and then "moderate" their speed, and a collision with loss of ife ensued, the jury (in view of the alteration of the law into a closer conformity with almost universal usage) would probably not hesitate to award the full penalty attached to manslaughter.

17. At present, the practice of running at full speed in fogs in the open ocean is so nearly universal, and so ably defended and ingeniously justified, that it is very possible no jury would convict.

18. Were the above suggestions adopted, the offences now constantly practised against the law imposing "moderate" speed in fogs, would be confined to vessels *not on the open ocean*, would be infinitely diminished in frequency, and therefore more controllable. The new law would probably be regarded by shipowners, captains, owners of goods, passengers, the Post Office, as *reasonable*, or at all events more reasonable than the present law, and obedience would be more readily given. Vessels that had crossed the Atlantic at full speed in a fog, under sanction of the amended law, would be more likely to "moderate" the speed in "narrow waters" than would be the case under the present law.

19. Vessels would still occasionally be run in "narrow waters" at higher speeds than "moderate:" collisions would still occur, and some loss of life, but the whole question would have advanced a stage, and the minds of the public would be prepared for further changes if found necessary. At present, and this is a very important consideration, the infraction of the law as to "moderate" speed in fogs is *never* taken cognizance of *except in cases of collision*, but if the proposed changes were made, the evidence of the log-books might procure conviction at the end of the voyage, which, if followed by a fine levied on the captain, even if paid by the owners, would have a deterrent effect, especially if the fine were increased at each conviction.

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20. The Committee have had the advantage of receiving the evidence of shipowners of wide experience, who look upon the question from a different point of view from the Committee, as also from that of their own captains, &c., and the opinions on this matter of the former class, viz., shipowners, require careful attention.

21. The managing director of a very important line of steamers produced the printed orders issued by the directors to their captains. In *one* set of regulations, said to specially apply to the management of the ships in fogs in "narrow waters" the official international regulations were emphasized with great stringency; no language could be stronger than the orders of the directors that reduction to "*moderate*" speed down to "*stopping*," should be always practised in fogs. In another set of orders, from the same directors, applicable to the *open ocean*, the directions were confined to a few words, saying, "the captains were in fogs to '*comply with the law.*'"

22. The directors of these companies are well aware that their captains break the law constantly, in fact that they navigate their vessels on almost every voyage, and sometimes throughout whole voyages, with, metaphorically speaking, ropes round their necks, and at first sight it may be supposed that the directors of a company whose ships were so conducted in defiance of the law would welcome the prospect of a change in the law; or would, at all events, when in the *open ocean*, wish to see their captains relieved of this inconvenient appendage; but, surprising to state, it is not so, these directors wish for the *status quo*, and the reason may probably be as follows, and although it is not likely that they would assert it, they might admit it if pressed.

23. The general purport of the evidence from shipowners, directors, and captains of merchant steamers in the most important "lines," may be summarised as follow:—"Our 'Company' is able to build *first-class* vessels of *great speed* and *handiness*, and *perfect* in all their fittings, *lights*, *sirens*, &c., and able to pay such salaries as to secure the *best captains* and *numerous* and *efficient crews*. The present law is wrong, is absurd, is unseamanlike, and more calculated to produce collisions than to prevent them; nevertheless, let the law remain as it is." But why? this Committee asks. The

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following is the outspoken answer of some of the captains, the implied answer of others:—"There ought (but we know it is impossible) to be two laws, one for vessels like ours, *of great speed, perfectly handy, thoroughly well found, commanded by men like us of great nerve and vast experience, with subordinate officers like ours, all with masters' certificates*, &c. Such vessels should not be interfered with or embarrassed by any law against full speed under any circumstances; but slower, less handy, less well found vessels, commanded by comparatively inexperienced nervous men, become a nuisance if they attempt to go at full speeds in fogs—and, therefore, in theory, there should be a *second* law, constraining such vessels not merely to go at '*moderate*' speed but to '*stop*' in a fog, and *keep on signalling their position;* they are dangerous to themselves and to us if they attempt to move in a fog, and some of them are aware of the fact, and do stop.'*—Finally, *we must break the law*, or we shall lose our positions, and our company will lose its *freight, passengers*, and *mails*. On the whole, therefore, recognising the impossibility of there being two laws, one for well found, handy vessels of great speed, and one for other vessels, we prefer the *status quo*, and will take our chance of collisions, and convictions of manslaughter, loss of certificates, &c."

24. This view of the matter the Committee believes, judging by the evidence, to largely prevail among the directors and captains in first-class lines of steamers. The evidence given by many persons in this inquiry is liable (very often quite unconsciously to the witnesses themselves) to be twisted by oblique motives, whether personal or caused by *esprit de service*, and this must be carefully borne in mind on any future inquiry.

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* A blindfolded man, walking about in a room, would much prefer that all other blindfolded persons should stop and indicate their positions instead of continuing to walk about. A person obliged to move quickly in a dark room would rightly consider his chances of collision with the furniture increased if the articles were also moving instead of at rest.

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## SANDY HOOK PILOTAGE.

THE following is a copy of the new Act, regulating the rates of Sandy Hook pilotage :—

"An Act regulating pilotage of the port of New York, passed April 3rd, 1884.

"The People of the State of New York, represented in Senate and Assembly, do enact as follows :—

"Section 1. The fees for piloting for the port of New York, by the way of Sandy Hook, are enacted as follows :—

"For every vessel inward bound, and not exempted from pilotage by any law of this State, or any regulation thereunder, and drawing less than fourteen feet of water, two dollars and seventy-eight cents per foot.

"For every vessel drawing fourteen feet, and less than eighteen feet of water, three dollars and thirty-eight cents per foot.

"For every vessel drawing eighteen feet, and under twenty-one feet of water, four dollars and thirteen cents per foot.

"For every vessel drawing twenty-one feet of water and upward, four dollars and eighty-eight cents per foot.

"If the master or owner of any vessel shall request the pilot to moor said vessel to any place within Sandy Hook, and not to be taken to the wharf or harbour of New York, or the vessel be detained at quarantine, the same pilotage shall be allowed, and the pilot entitled to his discharge.

"When any ship or vessel bound to the port of New York, and boarded by any pilot appointed by the Board of Commissioners of Pilots of the City of New York, at such distance to the southward or eastward of Sandy Hook lighthouse, as that said lighthouse could not be seen from the deck of such ship or vessel in the daytime and in fair weather, the addition of one-fourth to the rate of pilotage hereintofore mentioned, shall be allowed to such pilot, provided the commander of such vessel shall have agreed to pay such addition.

"Section 2. The pilotage on vessels outward bound, not exempt from pilotage, shall be as follows :—

"For every vessel drawing less than fourteen feet of water, two dollars and two cents per foot.

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"For every vessel drawing fourteen feet, and less than eighteen feet of water, two dollars and thirty-three cents per foot.

"For every vessel drawing eighteen feet, and less than twenty-one feet of water, three dollars and eighteen cents per foot.

"For every vessel drawing twenty-one feet of water and upward, three dollars and fifty-six cents per foot.

"Section 3. All Acts and parts of Acts inconsistent with this Act are hereby repealed.

"Section 4. This Act shall take effect immediately."

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PROPOSED BUREAU OF NAVIGATION IN THE UNITED STATES.—The House of Representatives on April 21st by a vote of 175 to 44 passed the Bill by Mr. Dingley, of Maine, and recommended by the Secretary of the Treasury, to create a Bureau of Navigation in the Treasury Department. The object is to lay the foundation of a bureau or board akin to the British Board of Trade, which shall be charged with the special duty of looking after the interests of the American commercial marine. The Bill provides for a Commissioner of Navigation, to be appointed by the President, at a salary of 4,000 dols. a year, and for a Deputy Commissioner and clerks, to be transferred from bureaus and divisions of the Treasury Department. It is proposed that the Commissioner shall discharge the duties now imposed upon the Registrar of the Treasury with reference to the registration and enrolment of vessels; those that are now performed by the Bureau of Statistics with respect to the recording and publishing of lists of vessels, and those performed by the tonnage division, in relation to the tonnage tax, the admeasurement of vessels, and the administration of the laws in reference to merchant seamen. The Commissioner is given power to change the names of vessels, and is required to investigate the condition and wants of our Merchant Marine and to report to Congress, through the Secretary of the Treasury, suggestions for the modification of the shipping laws, to advance the interests of the Merchant Service. —*New York Maritime Register.*

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## SUNDA STRAIT.

THE Hydographic Office, Admiralty, has issued (April 1) the following information relating to Sunda Strait; it is derived chiefly from reports received from officers of Her Majesty's ships, and from publications of the Netherlands Government referring to the volcanic eruption of Krakatoa, and to the earthquake wave with which the neighbouring shores were visited in August, 1883.

The Volcano of Krakatoa Island was in eruption in the year 1680, and although included within the category of active volcanoes, it remained in a state of comparative inactivity for upwards of 200 years.

In the year 1883, on May 20th, the volcano burst into eruption, accompanied by earthquakes, which were severely felt at Batavia, and at the same time vast showers of pumice and ashes were projected to a great distance. This eruption was observed from the Imperial German ship *Elizabeth*, and on the following day, when 100 miles from Krakatoa, a shower of dust was experienced which was estimated to become a layer one inch in thickness in 24 hours, and dust was observed to be still falling when the vessel had gained a position 300 miles S.W. of Sunda Strait. (Berlin, Annalen der Hydrographie, Heft 8 of 1883.)

On 26th August, 1883, Krakatoa again burst into eruption, and of such a terrible nature, that miles of coast on both sides of the strait were wholly devastated, and multitudes of people perished. On the 27th August, a succession of earthquake waves swept the shores of the strait, utterly destroying the towns of Anjer, Merak, Tyringin and Telok Betong, together with some of the lighthouses on both shores. This remarkable disturbance of the sea made itself felt in various parts of the world upon the same date, notably in Australia and Southern Africa, also at Karachi in India.

The vast amount of pumice which lay upon the surface of the sea, in some places many feet in thickness, gave an appearance as if the ocean bed had appeared above water.

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The following are some of the principal changes in the locality, resulting from the eruption, as defined from the recent surveys by the Netherlands Government Surveying vessel *Hydrograaf*.

GREAT CHANNEL.—The Great Channel or that between Krakatoa Island and the Coast of Java has not changed in such a manner as to affect navigation, so far as can at present be ascertained.

THWART-WAY ISLAND presents the appearance of being split in consequence of the destruction of the high trees which occupied the low ground and valleys.

MERAK.—A post office and telegraph station has been established near Merak in place of that destroyed at Anjer, and a semaphore has been erected on Great Merak Island.

*Light.*—A *fixed white* light, visible from a distance of 10 miles, is exhibited from Great Merak Island, and shows seaward of Fourth Point to one-third of a mile westward of St. Nicholas Point, except when intercepted by islands.

KRAKATOA ISLAND.—The larger part of Krakatoa Island, or that portion northward of the peak has subsided, and where the northern hills of the island formerly stood, there is now upwards of 80 fathoms water.

The whole group of islands adjacent are covered with volcanic mud.

VERLATEN ISLAND is nearly three times larger in area than formerly and is 587 feet high; it is also an active volcano separated from Krakatoa by a channel 2 miles wide.

BEZEE CHANNEL.—This channel is now obstructed by islands and dangers, and should on no account be used.

The two new islands in this channel, named respectively Steers island and Calmeyer island, are low banks of mud and pumice, their configuration is continually altering, and they are stated to be gradually subsiding.

The channel between Sebesie and Sebooko islands is reported dangerous, and until further examination is made had better be avoided.

STROOM ROCKS.— A *rock* which is stated to be well known to the local pilots, lies one mile S.E. from Stroom rocks.

*Bearings Magnetic. Variation*, 2° *E. in* 1884.

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## WATCH RATING.

THE following circular letter has been issued by the Superintendent of the Kew Observatory, and owners of first-class compensated watches can now have them rated and their performance certified on moderate terms. Certificates of three descriptions will be awarded. For the first a detention of eight weeks at the Observatory is prescribed; for the second, six weeks; and for the third, three weeks. A fee of one guinea is payable for a first-class certificate, half-a-guinea for a second, and five shillings and sixpence for a third. If they deserve a certificate of a lower grade, such will be granted. Failures will be charged half-fees. The circular sufficiently explains the value of the test, and the reason for instituting it. We may ask—Why might not a similar test and certificate be instituted in regard to chronometers?

"Sir,—In order to meet a demand hitherto unsupplied in this country, and to afford facilities similar to those enjoyed by Swiss, French, and American watchmakers of obtaining trustworthy and impartial evidence as to the quality of their work, the Kew Committee of the Royal Society have affiliated to the department for the examination and verification of scientific instruments, which has now worked with great success for nearly thirty years at their Kew Observatory, Richmond, Surrey, a department which will rate watches for either makers or the public on very moderate terms.

"They will issue, with every watch tested, a statement of its going, under varied conditions of position and temperature, and award to watches of superior excellence certificates of merit, which have been drawn up in conjunction with the directors of foreign observatories, in such a manner as to possess an equal value with the certificates already granted by the Geneva and Yale College Observatories.

"I am, Sir, yours faithfully,

"G. M. WHIPPLE, Superintendent.

"Kew Observatory, Richmond, Surrey, April 22."

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# CORRESPONDENCE.

## STELLAR NAVIGATION.

*To the Editor of the "Nautical Magazine."*

SIR,—I am glad to see by your last month's issue that yet another nautical man has awakened to the value of stellar navigation. Of Mr. Hudson's novel idea I should like to see a further explanation, if it is scientifically practicable. At present I hardly grasp his meaning. With regard to stars, however, let me bear witness to the justice of his remarks on their great usefulness.

Some five years ago an old friend who has left the sea, showed me an idea for extending Sumner's method to stars which had been given him by a naval officer, and asked me to experiment on it. It was in substance similar to that which Mr. Hudson now remarks on, except that I only took one altitude of each star, and with it its bearing, and then working one position, with assumed latitude, projected its "line of position" on the chart. In this way I have, as an experiment, got the lines of three stars and the moon to cut within a mile. In ordinary practice I used three stars, the third proving the absolute correctness, and at once showing if there had been any error in working. The three altitudes and bearings would be taken within five minutes, and *the point where the lines cut*, of course gave the ship's position, which, if the chronometer was correct, gave the exact place without doubt or error.

This is only a practical example of the subject on which you lately published some interesting papers—"The New Navigation." Any astronomical objects will do for this problem, whether sun, moon, stars, or planets, and with the number of officers carried, in large mail-boats especially, the computations can be divided, if necessary, to shorten the time of calculation.

In the *ordinary* use of stars, it is nearly always possible to choose a time when there is a good one on the meridian for latitude, and another on or close to the prime vertical, which will give you the correct longitude, no matter what latitude you work for, *i.e.*, if chronometer is correct. Stars also are just as good as

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the sun for azimuths; and Davis's tables give a list of stars which can be used by their tables as simply as the sun.

Again, any single observation of a star will, like the sun or moon, if taken with its bearing, give at once a correct "line of position" (with an assumed latitude), and if near land will give the bearings of some point of it to steer for. I have also applied this method with success to a.m and p.m. sights.

I am, Sir, yours truly,

W. B. WHALL.

Hamburg, April 17, 1884.

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## SHIPS' LIGHTS.

*To the Editor of the "Nautical Magazine."*

SIR,—May I trespass upon your valuable space to bring before your readers the urgent necessity of having the glasses of ships' side-lights of uniform shades of red and green. In many vessels the red shade is too light, but the green is principally at fault, and it is often very difficult, especially in bad weather, on making a light suddenly to tell whether it is bright or green, so faint is the green shade.

It would benefit all seafaring people if, before glasses for side-lights were permitted to be sold, it was rendered obligatory that they should be tested, and all that did not come up to the standard shade should be rejected. I would also call the attention of the Board of Trade Surveyors to what is a very bad custom and likely to be a very fruitful source of collision. I allude to the glare of light from deck saloons in many passenger ships.

Not long ago I passed close to a large passenger steamer one winter evening with her deck saloon splendidly lighted; so well lighted indeed that until she was nearly abreast of us her green light was quite outshone, and only the masthead-light was visible. There was a strong gale from the N.E. before which she was running about 14 knots per hour, while we were steaming about 6 against.

Had the coal she was using, as often happens, been giving forth volumes of dense smoke and thus obscuring her masthead-light, it would have been difficult to judge at first how she was steering, and I

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fancy the passengers comfortably seated at dinner would have been rudely startled had a collision occurred and interrupted their meal.

Surely it would be very little expense to have curtains of a brown colour to hide this glare, and it should also be the duty of those in charge to pay strict attention that they were drawn at night.

I am, Sir, yours truly,

W. H. S. M.

London, April 25th, 1884.

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## COMPULSORY PILOTAGE.

*To the Editor of the "Nautical Magazine."*

Sir,—In the article on "Compulsory Pilotage," in the April number of the *Nautical*, one point, and one I venture to think of very great importance, is lost sight of. No doubt in the existing condition of charts, and with the existing lighthouses, lightships, and buoys, the entrance to most of our English harbours is so plain that he "who runs may read," but suppose for a moment the lights extinguished and the buoys moved or removed altogether, how would the ordinary mariner whose acquaintance with the place is theoretical rather than practical, find his way into port without the assistance of a person who had local knowledge of an accurate description and kept up to the latest possible date. Such persons are not produced in a moment when wanted, and if they are to be kept in readiness for a time of necessity the profession must be made remunerative at other times. Now, in the event of war, we know that it is one of the first precautions if there is any fear of hostile operations by sea to extinguish the lights and move the buoys, and, under the present conditions of naval warfare, can the most optimist of Englishmen consider our position so secure that at no time should some one or more of our ports be open to such operations in consequence of the temporary absence of our fleet. If, moreover, as a further means of defence against such operations, submarine torpedoes are placed in the various channels, it becomes doubly necessary to have persons duly qualified by both general and special information of the locality to bring in the ships whose cargoes would, under the circumstances described, make very possibly the difference between life and

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death to the inhabitants of the port they sought to approach. Moreover, it is not desirable that the information as to the latter point, *i.e.*, the position of torpedoes, should be accessible to *anyone* who chooses to obtain it. Now in the licensed pilots we have a specially trained body or corporation with the requisite knowledge patiently obtained; no one except those who have passed or tried to pass the examination for a pilot can be aware of the amount of local knowledge required, and the difficulty of practically attaining it. Take for example the Downs, comparatively one of the simplest of the pilotage channels on the coast, yet it is no trifling effort of memory to remember without the assistance of chart or book, three cross bearings for each buoy, each having reference to objects on shore and to other buoys; yet without such information it would be practically impossible safely to take a vessel through the Downs if the buoys and light-vessels were moved. It is moreover highly desirable that those who possess this valuable information should have a position and moral tone which would reduce to a minimum the probability of their communicating it to the enemy either for money or from fear. If then it is desirable to preserve a body like the existing Trinity Pilots, how best can it be done without giving rise to the "hard cases," some of which are mentioned in your article. The great grievance appears to be, not that a pilot has, in certain cases, to be employed, but that his employment frees the shipowner on whose ship he is employed from all liability for damage arising from the pilot's want of due care or skill, because the relation of master and servant is not established between them, and the reason why this is not established is because theoretically the owner or his agent, the master of the ship, is bound, under a penalty, to employ the first pilot who offers his services after passing some particular boundary; though your article goes on to show (p. 276) that in a large, and I think increasing number of cases, practically the shipowner already selects his pilot as much as he does his captain and officers. What I would venture to suggest is, not the abolition of compulsory pilotage, but a single provision that, instead of being obliged under a penalty to take the *first* pilot who offers his services after reaching a certain point, that a shipowner should be obliged to engage a pilot before passing

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some particular point when inward bound, but for that purpose should be allowed to select from the whole body of pilots available. To take an instance, if vessels approaching London from the English Channel, instead of being obliged to take *the first* pilot who offers his services *after* passing Dungeness, were only obliged to take *a* pilot *before* passing Deal, each master could pick and choose his favourite all through the cruising ground, and if not yet suited could heave to or anchor in the Downs or off Dover, and send ashore for the special one required. Doubtless, practically, they would still take the first who offered—in another sense than usual *primus inter pares*—the master being only too glad to get rid of even a portion of his responsibility; but, nevertheless, if the first who turned up happened to be one of whom the master had unpleasant reminiscences from a former voyage, he would be passed by, and as in all cases the owner or master would have an option in the matter, the relationship of master and servant and with it the owner's liability would be established.

An incidental benefit would accrue to the whole body of pilots as well as of shipowners whose vessels are or may be damaged by these means, as the pilots would soon find out the advisability of getting rid of those who had rendered themselves unpopular from any cause, and by that means the competence of those left would be still higher raised, to the manifest present advantage of "all who go down to the sea in ships and occupy their business in great waters," and at the same time a highly-capable body of men well qualified to render services valuable at all times, but priceless in time of war, would be preserved.

I remain, Sir, yours faithfully,

PALINURUS.

Temple, May, 1874.

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*To the Editor of the "Nautical Magazine."*

SIR,—I am sorry Captain Griffin imputes any attempt at *hyper*-criticism to me; any such idea was far from my mind in remarking on Captain Hepworth's paper. As to reading it upside down,

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I might in justice retort with Paddy, "Shure *any* fule could rade it the *other* way up." But there seems to be one important fact, which is, that two steamship commanders of great experience of the locality are unanimous that *marked* local attraction exists between Cape Point and Agulhas. Now, taking into consideration the number of steamers that have been lost there and the *fearful* loss of life that has occurred, could not the Admiralty be persuaded to have reliable observations made and the matter set at rest.

I am aware of a special Admiralty circular as to an insetting current (of which Captain Hepworth doubts the existence) but have never seen any notice of local attraction which, if there, ought to be remarked on in the sailing directions and be noted on the Admiralty charts.—I am, Sir, your obedient servant,

W. B. WHALL.

Liverpool, May 17, 1884.

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## PORT OF COOKTOWN, QUEENSLAND.

*To the Editor of the "Nautical Magazine."*

Sir,—By this mail I send you a copy of the *Cooktown Courier*, containing some suggestions as to the best route for a sailing ship to come to this port at this time of the year, when the weather is so very unsettled on this east coast of Australia, that I consider the inner route quite impracticable for a large sailing ship, as the time she will probably take to make this passage and the safety of the ship are of the greatest importance.

However, in giving the preference to the outer route, I consider this also attended with a great deal of danger, owing to the fact that the Great Barrier reefs have not been surveyed. I consider both Trinity and Flinders openings very hazardous even to a steamer which is not dependent on the wind to make a straight course, but they are very much more so to a large sailing ship at this season, when the winds are shifting suddenly three or four points.

I came in through the Barrier towards Fitzroy Island on a S.W. course, and although this passage is not surveyed, I gave it the



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preference to Trinity opening, which is partly surveyed and contains numerous detached reefs and coral patches scattered in mid-channel.

I believe that unless immediate steps be taken by the Home or the Colonial authorities to survey and mark a safe opening through the great Barrier reefs, it will be the cause of ships coming to grief in endeavouring to find their way to Cooktown and other ports in North Queensland, and if you will, Mr. Editor, ventilate this subject through the medium of your valuable publication, you will, by doing so, confer, in our opinion, a great favour upon underwriters, shipowners and shipmasters, who may be interested in ships bound to these ports.

I remain, yours truly,

Cooktown, North Queensland,
14th February, 1884.

THOMAS OWEN,
Master, ship *Cambrian Princess*.

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## FOREIGN *v.* ENGLISH SAILORS.

*To the Editor of the "Nautical Magazine."*

Sir,—Taking up the *Nautical* the other day, I came across "Cosmopolite's" contribution under the above heading, and I must confess that I never read a letter which left a more painful impression on my mind.

I trust you will receive several protests against the conclusions at which he has arrived, and I feel impelled to ask you to record mine amongst them.

He states that his "twenty years' experience leads him to prefer whole crews of Lascars, Malays, Manilla men, Italians, Chilians, and Peruvians to Englishmen, whom he never ships if he can possibly avoid it." It is difficult to help wondering how far this unfortunate experience may be due to inherent peculiarities in his character as a commander.

With ten years more service than he quotes, I have also been intimately acquainted with all sorts and conditions of men, from

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the heathen Chinee, and the Irish American from San Francisco, to the Scandinavians, whom, by the way, he does not even mention, although they certainly are our keenest rivals. My first command was in a small steamer, not far removed from a collier, trading anywhere between the Baltic and Black Seas, a trade which does not invite the co-operation of the best type of seamen, but I very soon came to the determination to employ only my own countrymen, *i.e.*, British subjects, when I could get them, and I never found it necessary to discontinue this practice. I appeal to your readers to decide which is the more patriotic course of the two, and which the more calculated to improve the native article. Nay more, during the last years of my service afloat, I found it unnecessary to use, and discontinued carrying handcuffs on board my ship. I discovered that I could do without them.

To quote "Cosmopolite" once more, he "has noticed for the last fifteen years a steady deterioration in the character of the English sailor, until at last he has become a most degraded being with nothing to recommend him as far as he has been able to discover." He alludes, he says, to the majority, but he has already defined this to be forty-nine out of every fifty. I deeply regret that a British sailor (supposing "Cosmopolite" to be one) should have thought it necessary to characterise his fellow seamen in such terms.

Let me try to test the accuracy of this accusation which, if true, is a national evil of the gravest importance.

Of course, I admit that as seamen there has been a marked decrease of proficiency owing to very obvious reasons, over which Jack has no control, chiefly the wonderful development of steam traffic, which has superseded the use of sailing vessels to a very large extent, and has reduced the enrolment of apprentices in a proportional degree. Also I fear that recent legislation may have had a prejudicial effect on the sailor's amenability to discipline. But has not the British master declined in at least an equal ratio? Looking back through your pages, graver charges and much more precise and formidable indictments are brought against the master than the man, and the comparisons made between him and his Scandinavian brother are not very pleasant reading. But morally and physically I deny that the British sailor has deteriorated; on



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the contrary, I believe him to have improved more than any other of a similar class as regards sobriety and education. Look at the money saved now and sent home, owing to the facilities which have been placed at his disposal by the Board of Trade, for which I believe he has to thank Mr. Thomas Gray—than whom the sailor has no better friend if he only knew it.

I have before me the last report of the directors of the London Sailors' Home. It states amongst other items, that the cashier has received from boarders during the year deposits amounting to £76,532, that £31,704 were forwarded to the Institution by seamen when paid off, £6,480 remitted on their account to their various homes—British homes! and that upwards of 35,000 letters have been addressed to the care of the Home. Does this look like deterioration? How much of this money would have escaped the harpies and sirens of Ratcliffe Highway, and how many of these letters could have been written fifteen years ago? Surely a class of men with whom facts like these are associated have a right to claim our sympathy, and I think ought not to be stigmatised as most degraded beings.

I was present at the meeting at which this report was submitted, and saw about 270 intelligent and interested upturned faces, of whom only a very small proportion were foreigners, including none of the nationalities quoted by "Cosmopolite," and I heartily wish he had been there and seen them too.

Yours faithfully,

GEORGE B. VYVYAN.

London, May 21, 1884.

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## BRITISH SEAMEN.

*To the Editor of the "Nautical Magazine."*

SIR,—"Twenty years a Master" and "Cosmopolite" have been airing themselves in your Magazine, and ridiculing the British seamen.

Perhaps "Cosmopolite" will have no objection to answer the following plain questions:—

1. Is he an Englishman?
2. Was he ever before the mast?

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3. If so, was he ever kept working from 6 a.m. until 6 p.m. mending sails, splicing ropes, &c. Then told to go and clean brass work after 6 p.m. ?

4. Did he ever know the mate put the clock on one hour in the morning, and back one hour during the afternoon ?

5. After knocking off between 6 and 7 p.m., ordered to get his tea, and go in the boat for the captain, and be kept waiting with the boat until midnight, and after it, without bite or sup, or a cent in their pockets ?

6. If so, did the mate turn him out at 6 a.m. again, and if slack in turning out was he grossly abused by the mate, or second mate ?

7. Was he ever cursed and sworn at while at work during the day ?

8. Was he ever half starved in his food arrangements ?

Plain answers will oblige, yours,

North Shields, May 19th, 1884. OBSERVER.

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A Bag of Wheat for Nothing.—Messrs. Henderson Brothers, managing owners of the "Anchor" Line of steamships, 49, Union Street, Glasgow, have received a large number of small sample bags of wheat, grown on the lands of the St. Paul, Minneapolis, and Manitoba Railway. The wheat is of a very fine quality, and shows the extraordinary fertility of the soil in the well-known Red River Valley, situated in the north-west part of the United States. Any one desirous of seeing the wheat can procure a bag by sending for one to Messrs. Henderson Brothers, or by applying to any of the "Anchor" Line agents in this neighbourhood. Information will also be sent as to the best route to the Red River Valley, and the cheapest mode of getting there.

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## BOOKS RECEIVED.

*The Monthly Weather Report of the Meteorological Office*, for January, 1884. Published by the authority of the Meteorological Council.

It has long been the custom of the Meteorological Office to publish Daily, Weekly, and Quarterly Weather Reports, but the publication here noticed is their first attempt at producing a Monthly Weather Report. These different reports not only vary inasmuch as they are for different periods, but they deal very largely with quite different systems of observations. *The Daily Weather Report* comprises solely information received by telegraph, and is the basis of evidence used for the general forecasts and for the storm warnings. *The Weekly Weather Report* is a summary of temperature, rainfall, and duration of bright sunshine in the United Kingdom for agricultural and sanitary purposes, and the British weather is subdivided into several districts which are again grouped to represent the principal wheat-producing and the principal grazing districts. *The Quarterly Weather Report* is mainly the channel for publishing the observations made at the several self-recording observatories. *The Monthly Weather Report* now started is of a more general and popular character than any of those described above. It gives a history of the principal features of the weather experienced, and an effort is made at classification of different types of weather. A detailed table is given of all the cyclonic systems experienced during the month, and maps are given of their tracks as well as of the barometer temperature, and rainfall for the month. So far the information is limited to the weather of the British Islands. The *Report*, however, also contains a map showing the tracks of storm-centres over the North Atlantic during the month, and a concise history is given of each disturbance. In compiling this part of the work it is stated that only the observations received at the office by the 21st of the following month have been used, so that within three weeks of the close of the month the exact track is known of each storm across the Atlantic, and those which have influenced

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the weather of our Islands can be traced for several days before striking our coasts, if not entirely to their origin. The *Report*, however, states that it is not proposed by the Council to continue the issue of such Atlantic "storm tracks," and that the present is merely a specimen of what might be printed if the time necessary for its preparation were available.

*Report of the Meteorological Council to the Royal Society*, for the Year ending the 31st of March, 1883. Presented to both Houses of Parliament by command of Her Majesty.

The Report shows the varied nature of the work on which the office has been engaged. It deals first with Ocean Meteorology. The Charts of Meteorological Data for the Ocean District adjacent to the Cape of Good Hope, together with a volume of Explanatory Remarks, were published in the month of August, and were followed in October by the report on the Gales of the District, by Captain Toynbee: an abstract of each of these was published in the *Nautical Magazine*. Hope is held out that the Sea Surface Temperature Charts for the four cardinal months of the year, viz., February, May, August, and November, will be published in the course of the following summer. Considerable progress has been made with the Synchronous Weather Charts for the Atlantic Ocean, for the thirteen months beginning August 1st, 1882, and ending August 31st, 1883, being the period agreed upon for the maintenance of an international system of circumpolar observations. At about the middle of the period upwards of 1,000 vessels had co-operated in the work, and it was thought likely that observations would be obtained from between 300 and 400 ships daily for each chart. The marine branch also has on hand the discussion of the distribution of mean atmospheric pressure over the oceans of the globe. Steady progress is also being made with the discussion of the Meteorology of the Arctic Regions. Part III. has been published in the course of the year, and Part IV., now in hand, deals with documents relating to the winter stations of several expeditions.

*Weather Telegraphy.* There has been no material change in the system of preparation and issue of the forecasts during the year. The average of success over the whole of the United Kingdom has

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been 79 per cent., which is an improvement of 1 per cent. on the previous year. The percentage of storm warnings justified is about the same as in the previous year. During the last ten years the range of the total warnings justified varies from 75·6 in 1879 to 82·8 in 1880.

*Land Meteorology of the British Isles.* As the automatic observations have now been in full operation since the commencement of 1868, the Council are disposed to think that a sufficiency of materials has been amassed to allow of the determination of the principal meteorological elements for these stations, and that results, commensurate with their cost, would not accrue from their continued maintenance ; opinions were expressed that the maintenance of these observatories near the three extremities of the United Kingdom, and disposed approximately in the form of an equilateral triangle, would meet all the reasonable requirements of meteorology. The Council have, therefore, intimated their intention of discontinuing the observatories, except Aberdeen, Kew, and Valencia. This branch has also prepared the maps for the Meteorological Atlas of the British Isles.

## Our Library Table.

In calling attention to the *Notices to Mariners* and *Hydrographic Notices* (British and Foreign) which will be found under the usual heading and in the usual place, we must caution our Trans-atlantic navigators that the amount of bergs and field ice on the American side is excessive, extending further east and west than usual ; the *safe route* to avoid these trends from Cape Clear to lat. 40° in long. 47° and thence shaping a course, nearly on the parallel, for Sandy Hook. Mariners will be glad to hear that information comes from Quebec that preparations for carrying out the scheme of lighting up the St. Lawrence river buoys with gas are in active progress, and it is expected that most of them will be so lighted by the middle of the summer.

The books, pamphlets, and papers on our table are as follow :— The *Report of the Meteorological Council to the Royal Society*, for the year ending 31st of March, 1883 ; also the *Monthly Weather*

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*Report of the Meteorological Office* for January, 1884; and *A Barometer Manual for the Use of Seamen;* the latter pamphlet briefly discusses the winds and storms of the temperate zones and has something to say on tropical storms which we shall have to notice at length at an early date, when we shall also take occasion to remark on *The Storm which crossed the British Islands between September* 1*st and* 3*rd*, 1883, *and its Track over the North Atlantic*, a carefully prepared and well illustrated paper read before the Royal Meteorological Society by Mr. Charles Harding, F.R. Met. Soc.

The *Science Monthly* (London: D. Bogue), for May, gives its usual quota of practical science. We particularly recommend masters who voyage to the United States to enquire for *Rules for the care and handling of Chronometers*, an excellent paper on an important subject, read before the United States Naval Institute, and compiled by the Messrs. T. S. and J. D. Negus, of New York. The *Scientific American* (New York), for April, with its fund of practical information on science, art and manufactures, is capitally illustrated. *Revue Maritime et Coloniale* (Paris), for May, discusses meteorology and magnetism as developed in Iceland, and has a long notice on electric lights and sound signals. The *Bulletin de la Société de Geographie de l'Est* (Nancy), 1st part for 1884, is full of sound geography, with valuable historical notes. *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft IV., is as varied and useful as generally in its choice of subjects, meteorological and nautical. *Rivista Marittima*, Rome, March, 1884, contains, among other matter, an interesting official report upon the condition of the Italian Mercantile Marine. The April number has a continuation of the articles upon Italian naval expenditure, and a paper upon deep sea soundings.

*Revista del Boletin Official de las Armas Generales é Institutos de Guardia civil y Carabineros* (Manila), published monthly, under official direction, is wholly connected with the Phpiliines and other Spanish possessions in the Eastern Archipelago: though chiefly devoted to military subjects, it takes up science, agriculture, art and literature.

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We have also to hand the latest numbers of *Rivista General de Marina*, Madrid, *Bulletin de la Sociédad Geografica de Madrid*, *Van Nostrand's Engineering Magazine* (New York), *Le Yacht*, *Hansa*, *Das Schiff*, *L'Avenir Militaire*, the *New York Maritime Register*, the *Nautical Gazette* (U.S.), the *Marine Journal of Cincinnati*, and the *San Pedro Shipping Gazette*.

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## MARINE INVENTIONS.

*The following list has been compiled for this Journal by Messrs. W. P. Thompson and Boult, British and International Patent and Trade Mark Agents and Consulting Engineers, of* 323, *High Holborn, London, W.C., and* 6, *Lord Street, Liverpool :—*

### PATENTS PUBLISHED.

3168. 26th June, 1883. J. E. Liardet, of Brockley, in the county of Kent. "Improvements in apparatus and means for indicating the position of a ship's helm." According to this invention the movement of the rudder to port or starboard effects the closing of one or the other of two electric circuits. In each circuit there is an electric lamp, so that one lamp shows a light when the helm is to port the other when it is to starboard. When the helm is amidships both lamps are extinguished. These lamps are used besides the ordinary ship's lamps, and may be placed in the fore-top or the fore-rigging. Distinctive bells may also be sounded in a similar manner. The movement of the helm may, moreover, be recorded upon a board operated by clockwork.

3210. 28th June, 1883. J. Stewart, of Blackwall, in the county of Middlesex. "Improvements in the means of propelling and steering steamships or analogous vessels." This invention consists in the following improvements :—According to this invention it is proposed to have one propeller and one rudder in the middle of the stern of the vessel, as now generally in use, and in

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addition thereto there is provided a small propeller and a small rudder at each side of the main screw, but placed lower down and further forward. The power of the two side propellers combined is to be to the power of the main propeller as 2 is to 3. For instance, if a ship has 1000 horse-power nominal the main engine would be 600 horse-power, and those for the side propellers each 200 horse-power. The side propellers are of half the diameter of the main screw, and are placed well forward under each quarter of the ship. The tip of the side blades is preferably about on a level with the centre of the main screw. Three keels extend the full length of the vessel, the two side-keels commencing about midship-section and running aft. There will be three rudders, that at the centre (behind the main screw) being much smaller than now customary. The three rudder beds are so connected with the same wheel, chain, or other apparatus that they will move in unison.

3282. 3rd July, 1883. James Scott, of Granton, in the county of Midlothian. "Improvements in transporting boxes of fish from fishing vessels to vessels by which the same are carried to harbour, and in the means employed therefor." In carrying this invention into practice, advantage is taken of the fact that boxes containing fish do not sink in the sea, but float on its surface, and the invention consists in fastening together any suitable number of such boxes by suspension cords preferably passing through loops formed on a rope of any desired length, which is put overboard from a fishing vessel, and is taken on board by the vessel which is to carry the fish to harbour. The latter may for brevity be called the "carrier vessel." It is provided with a suitable derrick or crane, preferably so arranged as to overhang the open gangway in the vessel's side, and to lean towards the bow or stern at an angle. This allows the main rope to keep its place in the groove of the pulley, whilst the cords carrying the boxes pass over its shoulder. In working the invention the boxes are made fast to the hauling rope fitted to a buoy, from which the fishing vessels move away. The carrier vessel subsequently picks the buoy up and hauls the rope and boxes in.

3696. 28th July, 1883. Engel, a communication from Oscar

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Petzold, of Hamburg, German Empire. "An improved apparatus for ascertaining and recording speed of vessels." The apparatus consists in its main part of a small "float-board wheel" connected to a frame that can be lowered in guides of a vertical channel. The channel is open at bottom and the wheel is lowered until it dips into the water. The rotation of the wheel is transmitted by gearing to a vertical shaft connected with a counting device. The wheel may have feathering paddles. When the apparatus is thrown out of gear the wheel may be raised out of the water.

269. 2nd January, 1884. James Linkleter, 60, Hotspur Street, Tynemouth, Northumberland, Detaching gear manufacturer; William Pope Mears, 6, Prudhoe Terrace, Tynemouth, Northumberland, M.D. "Improvements in twin boats." There are two tubes square or quadrangular in section and these float on one of their angles. Thus a double keel is provided giving much lateral resistance but little longitudinal. The raft or boat falls easily into the water without jerk or strain. The shape being the same both top and bottom the floating power is alike whichever side is upwards. A kind of bridge is formed between the two square "tubes" and in this a mast is stepped.

444. 2nd January, 1884. James Plastow and Edward Richardson, both of Fish Docks, Grimsby, Fish Salesmen. "Improvements in pump gear for fishing smacks and such like vessels." This invention relates to means for working the pump from below deck. A pair of pump cylinders are inserted into openings provided for them in the deck of the vessel so that the water may be delivered on the deck as usual; between the pump cylinders there is a frame fixed on the deck and in it a slide moves vertically. The slide has a crosshead formed upon it and this carries three rods, two connect it with the pump buckets, the third passes through a stuffing box in the deck and being worked from below gives motion to the pumps.

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# TIDE TABLES FOR JUNE, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | LONDON BRIDGE. | | HULL. | | NORTH SHIELDS | | LEITH. | | DEVONPORT. | | DOVER. | | WESTON-SUPER-MARE. | | LIVERPOOL. | | GREENOCK. | | QUEENSTOWN | | KINGSTOWN. | | LONDONDERRY. | | BREST. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| S | 1 | 7 30 | 8 1 | — | 0 30 | 9 27 | 10 1 | 8 21 | 8 54 | 11 6 | 11 39 | 4 42 | 5 8 | — | 0 17 | 4 45 | 5 18 | 5 28 | 5 58 | 10 42 | 11 14 | 4 50 | 5 21 | 2 2 | 2 38 | 9 38 | 10 11 |
| M | 2 | 8 31 | 9 3 | 1 1 | 1 32 | 10 34 | 11 6 | 9 28 | 10 0 | — | 0 15 | 5 35 | 6 4 | 0 48 | 1 21 | 5 53 | 6 29 | 6 29 | 7 1 | 11 47 | — | 5 53 | 6 22 | 3 11 | 3 41 | 10 46 | 11 20 |
| Tu | 3 | 9 39 | 10 12 | 2 2 | 2 31 | 11 37 | — | 10 29 | 10 59 | 0 51 | 1 26 | 6 35 | 7 6 | 1 54 | 2 27 | 7 3 | 7 34 | 7 33 | 8 5 | 0 19 | 0 51 | 6 51 | 7 20 | 4 8 | 4 32 | 11 52 | — |
| W | 4 | 10 46 | 11 17 | 3 0 | 3 28 | 0 6 | 0 33 | 11 26 | 11 52 | 1 59 | 2 30 | 7 37 | 8 7 | 3 0 | 3 33 | 8 3 | 8 30 | 8 35 | 9 4 | 1 23 | 1 54 | 7 48 | 8 16 | 4 54 | 5 16 | 0 22 | 0 51 |
| Th | 5 | 11 48 | — | 3 56 | 4 22 | 0 59 | 1 23 | — | 0 16 | 2 58 | 3 25 | 8 34 | 8 58 | 4 4 | 4 33 | 8 56 | 9 18 | 9 31 | 9 56 | 2 23 | 2 49 | 8 43 | 9 8 | 5 38 | 5 59 | 1 18 | 1 42 |
| F | 6 | 0 11 | 0 34 | 4 46 | 5 6 | 1 45 | 2 5 | 0 38 | 0 58 | 3 49 | 4 12 | 9 21 | 9 43 | 4 59 | 5 22 | 9 38 | 9 57 | 10 18 | 10 39 | 3 12 | 3 34 | 9 30 | 9 50 | 6 20 | 6 40 | 2 8 | 2 28 |
| S | 7 | 0 55 | 1 16 | 5 25 | 5 44 | 2 24 | 2 43 | 1 18 | 1 38 | 4 34 | 4 55 | 10 4 | 10 24 | 5 44 | 6 6 | 10 16 | 10 35 | 11 0 | 11 21 | 3 55 | 4 15 | 10 9 | 10 27 | 7 0 | 7 19 | 2 42 | 3 1 |
| S | 8 | 1 37 | 1 55 | 6 3 | 6 23 | 3 1 | 3 18 | 1 57 | 2 15 | 5 14 | 5 32 | 10 44 | 11 4 | 6 27 | 6 47 | 10 54 | 11 13 | 11 41 | — | 4 34 | 4 53 | 10 45 | 11 3 | 7 38 | 7 56 | 3 20 | 3 39 |
| M | 9 | 2 12 | 2 29 | 6 41 | 7 0 | 3 35 | 3 52 | 2 33 | 2 50 | 5 50 | 6 7 | 11 24 | 11 44 | 7 7 | 7 25 | 11 32 | 11 50 | 0 1 | 0 20 | 5 12 | 5 31 | 11 21 | 11 38 | 8 13 | 8 29 | 3 57 | 4 15 |
| Tu | 10 | 2 49 | 3 4 | 7 18 | 7 36 | 4 9 | 4 26 | 3 6 | 3 22 | 6 24 | 6 40 | — | 0 3 | 7 42 | 7 58 | — | 0 7 | 0 38 | 0 56 | 5 49 | 6 6 | 11 55 | — | 8 45 | 9 0 | 4 32 | 4 48 |
| W | 11 | 3 20 | 3 38 | 7 53 | 8 9 | 4 44 | 5 2 | 3 39 | 3 56 | 6 56 | 7 11 | 0 21 | 0 39 | 8 14 | 8 30 | 0 24 | 0 41 | 1 14 | 1 31 | 6 23 | 6 40 | 0 12 | 0 30 | 9 16 | 9 32 | 5 4 | 5 21 |
| Th | 12 | 3 56 | 4 14 | 8 26 | 8 44 | 5 20 | 5 38 | 4 14 | 4 33 | 7 27 | 7 44 | 0 58 | 1 18 | 8 47 | 9 5 | 0 58 | 1 16 | 1 48 | 2 5 | 6 58 | 7 17 | 0 48 | 1 7 | 9 48 | 10 6 | 5 39 | 5 58 |
| F | 13 | 4 31 | 4 50 | 9 3 | 9 23 | 5 57 | 6 18 | 4 52 | 5 13 | 8 2 | 8 20 | 1 38 | 1 58 | 9 23 | 9 42 | 1 34 | 1 54 | 2 24 | 2 43 | 7 37 | 7 57 | 1 27 | 1 47 | 10 26 | 10 48 | 6 18 | 6 39 |
| S | 14 | 5 9 | 5 28 | 9 44 | 10 6 | 6 40 | 7 3 | 5 35 | 5 59 | 8 39 | 8 58 | 2 20 | 2 42 | 10 1 | 10 20 | 2 15 | 2 36 | 3 4 | 3 25 | 8 17 | 8 38 | 2 10 | 2 33 | 11 13 | 11 41 | 7 1 | 7 24 |
| S | 15 | 5 50 | 6 12 | 10 30 | 10 56 | 7 28 | 7 55 | 6 24 | 6 50 | 9 19 | 9 42 | 3 5 | 3 28 | 10 39 | 10 59 | 2 58 | 3 21 | 3 47 | 4 10 | 9 0 | 9 23 | 2 57 | 3 22 | — | 0 12 | 7 48 | 8 18 |
| M | 16 | 6 32 | 7 2 | 11 25 | 11 57 | 8 24 | 8 54 | 7 18 | 7 48 | 10 8 | 10 36 | 3 51 | 4 15 | 11 22 | 11 48 | 3 46 | 4 14 | 4 34 | 5 0 | 9 47 | 10 13 | 3 49 | 4 18 | 0 45 | 1 22 | 8 39 | 9 7 |
| Tu | 17 | 7 30 | 7 58 | — | 0 30 | 9 26 | 10 0 | 8 20 | 8 54 | 11 7 | 11 42 | 4 41 | 5 7 | — | 0 17 | 4 44 | 5 17 | 5 28 | 5 58 | 10 42 | 11 14 | 4 49 | 5 21 | 2 0 | 2 37 | 9 37 | 10 11 |
| W | 18 | 8 31 | 9 6 | 1 1 | 1 32 | 10 34 | 11 7 | 9 28 | 10 1 | — | 0 20 | 5 35 | 6 5 | 0 49 | 1 23 | 5 52 | 6 30 | 6 30 | 7 3 | 11 48 | — | 5 52 | 6 23 | 3 11 | 3 42 | 10 47 | 11 23 |
| Th | 19 | 9 42 | 10 15 | 2 3 | 2 34 | 11 39 | — | 10 32 | 11 2 | 1 0 | 1 39 | 6 37 | 7 11 | 1 57 | 2 32 | 7 6 | 7 38 | 7 36 | 8 9 | 0 22 | 0 56 | 6 54 | 7 25 | 4 10 | 4 34 | 11 57 | — |
| F | 20 | 10 47 | 11 20 | 3 4 | 3 34 | 0 10 | 0 39 | 11 31 | mid. | 2 16 | 2 50 | 7 44 | 8 17 | 3 8 | 3 45 | 8 9 | 8 39 | 8 42 | 9 14 | 1 30 | 2 4 | 7 56 | 8 27 | 4 58 | 5 22 | 0 29 | 1 1 |
| S | 21 | 11 52 | — | 4 4 | 4 33 | 1 7 | 1 34 | — | 0 28 | 3 22 | 3 52 | 8 48 | 9 18 | 4 21 | 4 55 | 9 8 | 9 35 | 9 45 | 10 15 | 2 37 | 3 9 | 8 58 | 9 28 | 5 48 | 6 15 | 1 32 | 2 0 |
| S | 22 | 0 23 | 0 50 | 5 1 | 5 29 | 2 0 | 2 26 | 0 55 | 1 22 | 4 21 | 4 49 | 9 47 | 10 16 | 5 28 | 5 59 | 10 2 | 10 29 | 10 45 | 11 14 | 3 39 | 4 8 | 9 56 | 10 21 | 6 43 | 7 11 | 2 27 | 2 54 |
| M | 23 | 1 18 | 1 45 | 5 57 | 6 24 | 2 52 | 3 18 | 1 49 | 2 15 | 5 17 | 5 44 | 10 45 | 11 14 | 6 29 | 6 57 | 10 56 | 11 23 | 11 43 | — | 4 36 | 5 3 | 10 46 | 11 11 | 7 39 | 8 5 | 3 21 | 3 47 |
| Tu | 24 | 2 10 | 2 38 | 6 51 | 7 17 | 3 43 | 4 8 | 2 41 | 3 5 | 6 9 | 6 34 | 11 42 | — | 7 23 | 7 47 | 11 48 | — | 0 11 | 0 37 | 5 29 | 5 54 | 11 36 | — | 8 28 | 8 50 | 4 13 | 4 37 |
| W | 25 | 3 2 | 3 27 | 7 42 | 8 5 | 4 33 | 4 58 | 3 29 | 3 53 | 6 57 | 7 20 | 0 9 | 0 35 | 8 10 | 8 33 | 0 13 | 0 37 | 1 2 | 1 26 | 6 19 | 6 43 | 0 1 | 0 26 | 9 12 | 9 34 | 5 1 | 5 24 |
| Th | 26 | 3 51 | 4 16 | 8 28 | 8 51 | 5 22 | 5 46 | 4 17 | 4 41 | 7 41 | 8 2 | 1 0 | 1 25 | 8 55 | 9 17 | 1 1 | 1 24 | 1 50 | 2 13 | 7 6 | 7 29 | 0 51 | 1 15 | 9 56 | 10 18 | 5 47 | 6 10 |
| F | 27 | 4 40 | 5 3 | 9 14 | 9 37 | 6 10 | 6 34 | 5 5 | 5 29 | 8 23 | 8 43 | 1 50 | 2 14 | 9 38 | 9 58 | 1 47 | 2 10 | 2 36 | 2 59 | 7 52 | 8 13 | 1 39 | 2 3 | 10 41 | 11 5 | 6 33 | 6 56 |
| S | 28 | 5 25 | 5 47 | 10 0 | 10 24 | 6 58 | 7 22 | 5 53 | 6 18 | 9 3 | 9 22 | 2 38 | 3 1 | 10 17 | 10 35 | 2 32 | 2 54 | 3 21 | 3 43 | 8 34 | 8 55 | 2 27 | 2 51 | 11 32 | — | 7 19 | 7 42 |
| S | 29 | 6 10 | 6 33 | 10 49 | 11 15 | 7 47 | 8 13 | 6 43 | 7 9 | 9 42 | 10 4 | 3 23 | 3 45 | 10 54 | 11 14 | 3 16 | 3 38 | 4 5 | 4 23 | 9 17 | 9 39 | 3 15 | 3 40 | 0 3 | 0 35 | 8 5 | 8 29 |
| M | 30 | 6 57 | 7 21 | 11 44 | — | 8 41 | 9 11 | 7 36 | 8 5 | 10 27 | 10 51 | 4 7 | 4 30 | 11 36 | — | 4 3 | 4 30 | 4 51 | 5 15 | 10 1 | 10 26 | 4 6 | 4 34 | 1 8 | 1 42 | 8 54 | 9 21 |



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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* — *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −3 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 13 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 3 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 22 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbellton | −0 23 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 8 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 8 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 58 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 58 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 3 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 43 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 13 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 13 | Devonport |
| Peterhead | −1 43 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 33 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 8 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 53 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 23 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 23 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 43 | London |
| Youghall | +0 18 | Queenstown |

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## MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 179 | Ireland—South and North Coasts—Fastnet Rock; Hook Point; Tuskar Rock; and Rathlin Island | New Danger signals. |
| 180 | „ North Coast—Lough Foyle—Moville | New Pile light. |
| 181 | „ West Coast—Cashla Bay | Sunken rock. |
| 182 | Norway—West Coast—Aas Vœr Group—Andersbak Islet | Particulars of light. |
| 183 | Baltic—Gulf of Finland—Sveaborg—Gröhora Holm | Particulars of light. |
| 184 | Spain—North Coast—Port Pasages | New harbour lights. |
| 185 | Mediterranean—Spain—Port Aguilas | Light and buoy on breakwater. |
| 186 | „ Coast of Tunis—Tabarca and Benzert | Lights discontinued. |
| 187 | „ Sicily—Ustica Island—Uomo-Morto Point | New light. |
| 188 | „ Ionian Sea — Sivota Island | New light. |
| 189 | Red Sea—Nubia—Mersá Durúr | Discovery of shoal. |
| 190 | „ Sawákin Group (N.W. part) | Reef discovered. |
| 191 | India—West Coast—Cutch Gulf—Karumbhar Island | New light. |
| 192 | Bay of Bengal—False Point | Light altered in character. |
| 193 | China—East Coast—Hutau Bay—Skead Islet | Discovery of rock. |
| 194 | Australia—Coral Sea—Lihou Reefs, &c. | New reefs discovered. |
| 195 | „ Marion Reef | New particulars. |
| 196 | „ Osprey Reef | New reef to southward. |
| 197 | North America—West Coast—Georgia Strait—Fraser River—North Sand Head | Particulars of new light and fog-signal. |
| 198 | South America—Rio de la Plata—Martin Garcia Island | New light. |
| 199 | United States—Virginia—Chesapeake Bay—Middle Ground | New bell buoy. |
| 200 | Nova Scotia — Shelburne Harbour—McNutt Island—Cape Roseway | New fog-signal. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

179.—Ireland.—*South and North Coasts.—Danger Signals at Fastnet Rock, Hook Point, Tuskar Rock, and Rathlin Island Lighthouses.*—From 1st May, 1884, danger signals would be made at the following lighthouses, when vessels are observed standing into danger:—Fastnet rock, south-west of cape Clear.—Hook

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point, eastern side of entrance to Waterford harbour.—Tuskar rock, eastward of Carnsore point, Wexford.—Rathlin island, North channel, coast of Antrim. The signal flags J. D. of the Commercial Code will be hoisted, and a gun or rocket will be fired and repeated till the signal is observed.

180.—IRELAND.—*North Coast.—Lough Foyle.—Pile Light off Moville.*—On 1st May, 1884, a light would be exhibited from a pile lighthouse erected in about 9 feet at low water spring tides, and nearly 3 cables S.S.E. from the quay, at Moville, north side of Lough Foyle. The light will be an *occulting white* light, visible for a period of about *five seconds*, and *eclipsed* for about *five seconds;* elevated about 37 feet above high water. *Variation*, 23° *W.*

181.—IRELAND.—*West Coast.—Cashla Bay.—Sunken Rock in Upper Part.*—The officer commanding H.M. Coastguard cruizer *Argus*, reports the existence of a sunken rock lying in the anchorage in the upper part of Cashla (or Costello) bay. This rock, on which the *Argus* swung when at anchor, is small in extent, pinnacle-shaped, with 9 feet on it at low water, and 18 feet close around; it lies with the following bearings and distance:—Extremity of quay, S.E. by E., distant 3¾ cables; ordnance tower, south. *Variation*, 23½° *W.*

182.—NORWAY.—*West Coast.—Aas Vær Group.—Particulars of Andersbak Islet Light.*—The following information has been received, concerning the light exhibited on Andersbak, the N.E. islet of Aas Vœr (Aasvär) group. The light is a *fixed* light, showing *white* between the bearings of E. by S. ¼ S. (leading northward of the north-western rock of Aas Vœr group), through south, and S.W. ⅛ S.; *red* from S.W. ⅛ S., through west, to W. by N. ¾ N. (leading southward of Synst holm); and again *white* from W. by N. ¾ N. to N.N.W. ¾ W. (leading northward of Skinneri ground). It is elevated 72 feet above the sea, and visible from a distance of 11 miles. The lighthouse consists of a stone tower above a dwelling. Position, lat. 66° 16′ N., long. 12° 19′ E. *Variation*, 13½° *W.*

183.—BALTIC.—*Gulf of Finland.—Sveaborg Approach.—Light on Gröhara Holm.*—With reference to Notice 94, p. 234, on the exhibition of a light from a light erected on Gröhara holm, approach

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to Sveaborg, the following particulars have been published concerning the light (re-exhibited on 3rd April, 1884, after temporary discontinuance) :—The light is visible through an arc of 309°, showing a *fixed red* light through an arc of 200°, or approximately between the bearings of N.E. by E. $\frac{7}{8}$ E. and W. $\frac{3}{8}$ S. ; a single *red* flash of *one second* duration followed by an eclipse of *four seconds*, through an arc of 50°, or approximately from N.E. by E. $\frac{7}{8}$ E. to N. by E. $\frac{3}{8}$ E.; a *fixed white* light (leading clear of all shoals) through an arc of 9° E., or approximately from N. by E. $\frac{3}{8}$ E. to N. $\frac{5}{8}$ E. ; and two successive *white* flashes, each of *one second* duration, followed by an eclipse of *four seconds*, through an arc of 50°, or approximately from N. $\frac{5}{8}$ E. to N.W. $\frac{1}{8}$ N. A faint light is seen through the remaining portion of arc (51°), or approximately from N.W. $\frac{1}{8}$ N. to W. $\frac{3}{8}$ S. On each side of the arc of 9°, through which the *fixed white* light is shown, there is a sector of $1\frac{3}{4}$°, within which both the *fixed white* light and the *flashing* light may be seen, but vessels must not pass beyond the limits of the *fixed white* light. The light is elevated 55 feet above the sea, and should be visible from a distance of 12 miles. The lighthouse, of iron, circular in shape and painted red, stands on a granite base; the lantern roof and cupola are of copper unpainted. Position, lat. 60° 6′ 20″ N., long. 24° 59′ 45″ E.

*Note.*—Vessels proceeding from Grohara holm to Sveaborg must be guided by the light shown from Gustafsvärd castle, western side of Gustav sound (see Notice 93, p. 234). *Variation*, 4° *W.*

184.—Spain.—*North Coast.—Harbour Lights in Port Pasages.* —On 1st February, 1884, two harbour lights were exhibited in port Pasages. The *southern* light, shown from San Sebastian (San Pedro) tower on the western side of the port, is a *fixed red* light. The *northern* light, shown from the north point of Bonanza mole on the eastern side of the port, is a *fixed green* light; it bears N. by E. $\frac{1}{4}$ E. from the red light, distant about 180 yards. These lights, shown from iron supports about 15 feet high, should be visible from a distance of 6 miles. *Variation*, $17\frac{1}{4}$° *W.*

185.—Mediterranean.—*Spain.—Port Aguilas.—Light and Buoy Marking Breakwater.*—With reference to Notice 96, p. 235, on the destruction of the breakwater at port Aguilas during the gale of



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20th December, 1883, and that the red light at the extremity of the breakwater had also been washed away; H.M. Vice Consul at Aguilas states that the breakwater works are in progress, and that it is estimated the breakwater should be completed within the next three months. Also, that a floating *red* light is provisionally exhibited inside the outer end of the breakwater, and a buoy marks the spot up to which large stone blocks may have been washed.

186.—MEDITERRANEAN.—*Coast of Tunis.*—With reference to Notice in 1881, on the exhibition of a fixed light at Tabarca Island; and the exhibition of two fixed lights at Benzert road:—

(1.) *Tabarca Island.—Light discontinued.*—On 17th March, 1884, the light on Tabarca island was discontinued.

(2.) *Benzert Road.—Discontinuance of Green Light.*—Also, on 17th March, 1884, the fixed green light at Benzert was discontinued.

187.—MEDITERRANEAN. — *Sicily. — Ustica Island.—Light on Uomo-Morto Point.*—On 6th April, 1884, a light would be exhibited from a lighthouse erected on Uomo-Morto point, near Cape Falconara, east coast of Ustica island. It is a *fixed white* light varied by *flashes every thirty seconds*, visible through an arc of 257°, or between the bearings of N. 3½° E. and S. 73½° E.; elevated 328 feet above the sea, and should be seen—the fixed light from a distance of 12 miles, the flashes from a distance of 25 miles. The lighthouse, 23 feet high, is situated on the seaward side of a one-storied dwelling of the same height, the whole being painted light yellow. Position, lat. 38° 42′ 40″ N., long. 13° 12′ E. *Variation*, 10½° *W.*

188.—MEDITERRANEAN.—*Ionian Sea.—Corfu South Channel.—Light on Sivota Island.*—With reference to Notice in 1883, on the intended exhibition of a light from a lighthouse then in course of construction on the northern point of Sivota (Sybota) island, near Mourzo (Mourtzo or Murto), eastern side of Corfu south channel, coast of Albania; on 5th April, 1884, the light would be exhibited; it is a *revolving white* light with *flashes every thirty seconds;* elevated 282 feet above the sea, and visible from a distance of 18 miles. Position, lat. 39° 24′ N., long. 20° 13′ 40″ E.

189.—RED SEA.—*Nubia.—Shoal S.S.E. of Mersá Durúr.*—Reported on the authority of Captain Le Mercier, of the *Duchaffaut*,

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as lying about 6 miles S.S.E. from Mersá Durúr, and 8 miles distant from the nearest shore. This shoal (*Le Mercier shoal*), with 10 to 13 feet water on it, was not indicated by any ripple. Position, lat. 19° 44′ N., long. 37° 17½′ E.

190.—Red Sea.—*Sawákin Group.—Reef between Sha'b Mobiyett and Sha'b Gusser.*—The Officers of H.M. Ships *Hecla* and *Humber*, report the existence of a reef lying nearly midway between Sha'b Mobiyett and Sha'b Gusser, N.W. part of Sawákin group. This reef (*Neera reef*)—on which the British steam-vessel *Neera* grounded on 21st February, 1884, and became a total wreck—extends about 3 miles in a N.N.W. and S.S.E. direction, with a breadth of about half a mile; there are several coral heads with depths of about 6 feet (from which the lead dropped into deep water) on it and the sea was seen to break near the northern end; the main portion of the reef however is not easily distinguished; a sounding of 17 fathoms was obtained near its southern edge. The centre of the reef, near which the *Neera* grounded, lies with the following bearing. North extreme of Hind Kadám island, N. 54° E. South extreme of Seïl Ad-dár Kebir island, N. 84½° E. Position, lat. 19° 11′ N., long. 37° 39½′ E.

*Note.*—Vessels should not attempt to pass between Sha'b Mobiyett and Sha'b Gusser. On Sha'b Auber, a coral head shows above water. Breakers were seen on the 6½ fathoms shoal lying about 2 miles S.S.E. of Sha'b Mobiyett, there being considerable sea at the time. *Variation*, 4½° *W.*

191.—India.—*West Coast.—Gulf of Cutch.—Light on Karumbhar Island.*—On 1st February, 1884, a light was exhibited from a light-house recently erected on Karumbhar (Karúmba) island, eastern side of Salaya (Seraia) creek. The light—named Pata Pir—is a *fixed white* light, visible between the bearings of S. 59° W., through south, and N. 18° W.; elevated about 30 feet above high water, and should be seen from a distance of about 10 miles. The lighthouse, about 36 feet high, and coloured white, is situated at the southern end of a small building. Position, lat. 22° 26′ 15″ N., long. 69° 34′ 40″ E. *Variation*, 1½° *E.*

192.—Bay of Bengal.—*False Point Anchorage.—False Point Light.—Intended Alteration in Character.*—With reference to Notice



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in 1880, on the re-exhibition of False point light, further Notice has been given, that on 1st September, 1884, the following alteration will be made in the character of this light:—It will be an *occulting white* light, obscured for *four seconds* once in *every half-minute;* elevated 129 feet above high water, and visible from a distance of 19 miles. The lighthouse, 132 feet high, is constructed of red granite, and has a large white star in the centre, facing eastward.

193.—China.—*East Coast.—Hutau Bay.—Rock North-Westward of Skead Islet.*—Captain J. P. Maclear, H.M. Surveying vessel *Flying Fish*, reports the existence of a rock in Hutau bay, lying with Goo rock bearing S.W. by S., distant 9 cables. This rock (*Flying Fish rock*) is stated to answer the description given of Goo rock (covering at a quarter flood), soundings of 5 to 8 fathoms were obtained close around it. The rock lies with the following bearings:—Skead islet, S.E. $\frac{7}{8}$ E.; High islet summit, S. $\frac{7}{8}$ W.; Awoolā rock, W. by S. $\frac{1}{4}$ S. Position, lat. 23° 51′ 20″ N., long. 117° 42′ 20″ E. *Variation*, $\frac{1}{4}$° *W.*

194.—Australia.—*Coral Sea.—Islets between Lihou Reefs and Tregrosse Islets.*—Captain Dale, H.M.S. *Diamond*, December, 1883, reports the existence of four islets lying between Lihou reefs and Tregrosse islets. Of this group (*Diamond islets*), Central and East islets, each about one mile in diameter, were seen from the deck of the *Diamond*, the others from the masthead; the islets have broad sandy beaches, and are thickly covered with low trees and bush. Their approximate positions are as follows:—Central islet, lat 17° 26′ S., long. 151° 0′ E.; East islet, lat. 17° 25′ S., long. 151° 7′ E.; North-west islet, lat. 17° 23′ S., long. 150° 54′ E.; South-west islet, lat. 17° 35′ S., long. 150° 55′ E. The *Diamond* also passed over a shoal, in approximately lat. 17° 22′ S., long. 151° 5′ E.

195.—Australia.—*Coral Sea.—Particulars of Marion Reef.*—Information on Marion (Paget) reef, from a German source:—Marion reef—about 110 miles southward of Lihou reef—the eastern extreme is in lat. 19° 3′ S., long. 152° 26′ E., extending thence in a W.N.W. direction for a distance of about 8 miles; and to the southward for about 5 miles, then apparently trending to the

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westward. From this, in connection with the original report by Mr. Paget, Master of the schooner *Marion Renny* in 1868, it is assumed the reef extends (decreasing gradually in breadth) to its western extreme, in about lat. 19° 10′ S., 152° 0′ E.; the western limit must however be considered undefined. In December, 1883, H.M.S. *Diamond* passed about 10 miles eastward of the above position of Marion reef, without sighting it; and no bottom was obtained, with 130 fathoms of line.

196.—Australia.—*Coral Sea.—Reef Southward of Osprey Reef.*—The existence of a reef, lying about 100 miles southward of Osprey reef is reported. This reef (*Heath reef*) is stated to extend about 3 miles in a W.N.W. and E.S.E. direction, with a breadth of 2½ miles; except on the N.W. extreme, where some dry rocks were seen, and at an opening on the northern side, the outer edge of the reef was awash. Position as given, lat. 15° 28′ S., long. 147° 6′ E.

*Note.*—The existence of these islets and reefs, and the possible existence of others, within the western margin of the "Outer Route," points to the desirability of vessels navigating this part of the Coral sea, keeping eastward of Lihou, Frederick Kenn, and Osprey reefs.

197.—North America.—*West Coast—Strait of Georgia—Fraser River Entrance—Light and fog-signal on North Sand Head, withdrawal of light-vessel.*—On 1st May, 1884, a light will be exhibited from a lighthouse erected on North Sand head, S.W. end of Sturgeon bank, northern side of Fraser river:—It would be a *fixed white* light, elevated 52 feet above high water, and visible from a distance of 12 miles. The lighthouse, 49 feet high, constructed of wood and hexagonal in shape, stands on an iron pile foundation. Position, lat. 49° 5′ N., long. 123° 16′ W. This light, besides serving as a coast light, will indicate the entrance to the channel between the Sand heads at Fraser river entrance. From the lighthouse, No. 1 buoy bears S. 6° W., distant 8 cables. Also, during thick foggy weather, a bell will be sounded from North Sand head lighthouse. Also, on the exhibition of North Sand head light, South Sand head light-vessel will be withdrawn. *Variation*, 23¼° *E.*

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198.—South America.—*Rio de la Plata.—Light on Martin Garcia Island.*—A new light is now exhibited from a lighthouse erected on the summit of Martin Garcia island, entrance of the Rio de la Plata. It is a *fixed white* light, elevated 141 feet above the level of the river, and visible from a distance of 14 miles. The lighthouse, constructed of wood, is situated 547 yards northward of the site of the former light. Position, lat. 34° 10′ 50″ S., long. 58° 15′ 40″ W.

199.—United States.—*Virginia.—South-eastern end of Middle Ground, entrance to Chesapeake Bay.—Bell Buoy.*—On or about April 20, 1884, a bell buoy would be moored near red buoy, No. 2, off the south-eastern end of the Middle ground, entrance to Chesapeake bay, Virginia. It will be rung by the action of the sea.

200.—Nova Scotia.—*S.E. Coast.—Shelburne Harbour Entrance.—McNutt Island.—Fog-Signal at Cape Roseway Lighthouse.*—On 15th March, 1884, a fog-signal would be established at Cape Roseway lighthouse, S.E. extreme of McNutt island, southern side of Shelburne harbour entrance. The signal is a horn, worked by compressed air, which, during thick or foggy weather, will give blasts of *ten seconds'* duration, with intervals of *one hundred and ten seconds* between the blasts.

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Bay of Bengal.—*Oyster Reef Lighthouse.—Caution.*—While going to press intelligence reaches us that the Oyster reef lighthouse has been destroyed, if it has not wholly disappeared, during a cyclone.

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Charts, Plans, &c., Published by the Hydrographic Department, Admiralty, in March and April, 1884.

| *No.* | | *s.* | *d.* |
|---|---|---|---|
| 2137 | Eastern Archipelago :—Gaspar strait ... ... | 2 | 6 |
| 894 | Greece, east coast :—Salamis strait and Giorgio channel ... ... ... ... ... ... | 0 | 6 |
| 633 | Ireland, east coast :—Malahide inlet. Rogerstown inlet. Skerries. Drogheda entrance ... ... | 1 | 6 |

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| No. | | s. | d. |
|---|---|---|---|
| 2887 | North America, west coast:—San Pablo and Suisun bays, including Mare island and Karquines straits | 1 | 6 |
| 687 | Newfoundland, south coast:—Harbours and anchorages on the north coast of Fortune bay ... ... | 1 | 6 |
| 284 | Newfoundland, west coast:—Cow head harbour to Ste Genevieve bay, with the Canadian and Labrador coasts between Great Mecattina island and Amour point ... ... ... ... ... | 2 | 6 |
| 615 | New Zealand, Middle island:—George Bligh, and Milford sounds ... ... ... ... ... | 2 | 0 |
| 1443 | Scotland, east coast:—Stonehaven bay ... ... | 1 | 0 |
| 2393 | England, west coast:—Milford haven ... ... | 2 | 6 |
| 1438 | Scotland, east coast:—Peterhead ... ... ... | 1 | 6 |
| 1439 | Scotland, east coast:—Fraserburgh ... ... | 1 | 6 |
| 2531 | North America, west coast:—Cape Mendocino to Vancouver island. (Plans, Humbolt bay. Cape Orford reef. Koos river. Umquah river. Yaquina river. Gray harbour. Duncan rock and cape Classet) ... ... ... ... ... | 2 | 6 |
| 208 | Japan:—Harbours and anchorages on the east coast of Nipon—Kama-i-shi harbour, Siriya-saki anchorage. Aikawa anchorage. Inu-bo-ye and Tone Gawa. Kats' Ura bay ... ... ... ... | 1 | 6 |
| 1809 | Africa, east coast:—Mozambique harbour to Ras Pekawi. (Plans, Ibo harbour. Pomba bay. Almeida bay. Fernando Velosa bay) ... ... | 2 | 6 |

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CHARTS THAT HAVE RECEIVED IMPORTANT CORRECTIONS.

| No. | |
|---|---|
| 2576 | Eastern archipelago:—Sulu archipelago and the north-east coast of Borneo. |
| 1630 | England, east coast:—Orfordness to Cromer. |
| 102 | England, east coast:—Pakefield gateway to Orfordness. |
| 1069 | Australia, east coast:—Port Jackson. |

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*No.*

2431 North America, west coast :—Port Simpson to Cross sound.
2459 North-west Pacific ocean.
2556 France, north coast :—Calais.
2694 France, west coast :—The channels between Ile D'Ouessant and the mainland.
1518 Mediterranean, Greece :—Salamis and Eleusis bays.
928 Eastern archipelago :—Sulu archipelago.
1709 Prince Edward island :—Charlottetown harbour.
1480 China :—Yang-tse-Kiang to Nanking.
1199 China :—Kweshan islands to the Yang-tse-Kiang.
2172 North America, west coast :—Behring strait.
287 Borneo, north coast :—Gaya bay to Sandakan harbour.
1008 Cochin China :—Davaich head to Hone Gomme.
1055 Australia, west coast :—Bedout island to cape Cuvier.
599 Africa, west coast :—Cape Verde to cape Roxo.
1231 Africa, west coast :—Cape Blanco to cape Verde.
1228 Africa, west coast :—Azamor to Santa Cruz.
1229 Africa, west coast :—Santa Cruz to cape Bojador.
2763 Australia, north-east coast :—Coral sea and Great Barrier reef, sheet 1.
29 South Pacific ocean, Rapa or Oparo island :—Ahurei bay.
1048 Australia, north-west coast :—Buccaneer archipelago to Bedout island.
897 Africa, west coast :—Volta river.
2246 Baltic sea :—Port Baltic to Hogland.
2245 Baltic sea :—Hogland to Seskär, south shore.
2247 Baltic sea :—Hogland to Seskär, north shore.
2298 Baltic sea :—Wirmo fiord to Sodra Biörko.
2301 Baltic sea :—Umea light to Tome point.

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HYDROGRAPHIC NOTICES ISSUED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY, 1884.

*No.*

7.—PACIFIC OCEAN. Relating to Ellice, Gilbert, Marshall, Caroline, and Admiralty islands, also to the coasts of New Ireland and New Hanover.

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*No.*

8.—Pacific Ocean, S.W. part. Relating to the New Hebrides and Loyalty islands.

9.—Bristol Channel (Sailing directions). Additions and corrections.

10.—Newfoundland Pilot. Relating to the coast of Newfoundland and N.E. coast of Labrador.

11.—China Sea Directory, Vol. I. Relating to Sunda strait.

12.—South America Pilot, Part I. Relating to portions of the east coast of South America.

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Books.

| | *s.* | *d.* |
|---|---|---|
| Africa Pilot or Sailing Directions for the west coast of Africa, Part II. From the river Cameroon to the Cape of Good Hope, including Ascension, St. Helena, Tristan da Cunha, and Gough islands, 3rd edition, 1884 ... | 4 | 6 |
| Sailing directions for the Fiji Islands, Supplement No. 1. Revised sailing directions relating to the northern coasts of Viti Levu, the south-west and north-west coasts of Vanua Levu, with the off-lying and intermediate reefs and islets ... ... ... | 0 | 6 |

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## OUR OFFICIAL LOG.

Carriage of Liquefied Carbonic Acid on board Ship.—Notice to Owners and Masters.—The attention of the Board of Trade has been called to the dangerous properties of liquefied carbonic acid which has been in use in Germany for some time past in the bottling of Lager beer, and which is likely to come into use in this country for the English beer trade, and possibly for other industries. The Board are informed that the Imperial German Government have issued regulations for the safe distribution of this substance, and an apparatus for its conveyance has been made in accordance with those regulations. The Board are, however,

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advised that this apparatus, or vessel containing the liquid gas, is liable to explode under considerable pressure, and would therefore be dangerous, if carried as cargo on board ship, unless proper precautions are taken in its stowage and transportation.—THOMAS GRAY, Assistant-Secretary, Marine Department, Board of Trade.—By Order of the Board of Trade, April, 1844.

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CAUTION.—STOWAGE OF SIGNALS OF DISTRESS.—Masters and owners of emigrant vessels are informed:—1. That nothing whatever of any kind, whether explosive or otherwise, should be carried in the same magazine or receptacle with gunpowder. 2. That nothing whatever of any kind, whether explosive or otherwise, should be carried in the same magazine or receptacle with signals made of "gun-cotton" or "cotton-powder." 3. And that rockets, blue lights, and all "fireworks" should be carried in separate boxes which should not be kept below the weather-deck. 4. The Board's officers have been directed to see that the above instructions are complied with before granting clearances to emigrant ships or declarations to passenger steamers.—THOMAS GRAY, Assistant Secretary, Marine Department.—By order of the Board of Trade, April, 1884.

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UNDERMANNING.—Board of Trade, Marine Department, April, 1884.—The attention of the Board of Trade has been directed to the subject of manning, by seamen, by underwriters, by the reports of their own officers, and by the facts disclosed in the official returns. From these returns it appears that the number of seamen carried in proportion to tonnage is in the aggregate diminishing year by year, and further that there are differences in the numbers of men carried in ships belonging to different owners which it is difficult to account for. It further appears that in some sea-going steamers the number of seamen carried is not sufficient to provide a proper watch. It is obvious that insufficient manning may be a cause of wreck or casualty, and the Board propose in every future inquiry into a wreck, to direct attention to the question

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whether the ship was properly manned.—By order of the Board of Trade, T. H. Farrer, Secretary.—Thomas Gray, Assistant-Secretary, Marine Department.

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Official Return of British Wrecks in April, 1884.—The number and tonnage of British vessels respecting whose loss reports were received at the Board of Trade during the month of April, 1884, and the number of lives lost are as follow:—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing ..... | 57 | 14,096 | 81 |
| Steam..... | 11 | 8,105 | 6 |
| Total ..... | 68 | 22,201 | 87 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in April, relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—Thomas Gray, Assistant-Secretary, Marine Department.—Board of Trade, 1st May, 1884.

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Her Majesty's Government have presented the town of Tangier with a complete lifeboat, as a recognition of the valuable services rendered by the inhabitants on the occasion of the wreck of the British barque *Punjaub* at that port, on the 19th December last. Her Majesty's Government have also awarded binocular glasses to Rais Abdeslam Balga, Captain of the Port of Tangier and to Kaid Cid Drio Ben Abdelwahed, commanding the artillery; and a gold medal to Mr. Ricardo Alvarez, and silver medals to Edward Carleton, Rafael Duarte, Eduardo Alcala and Hamedel Amchott, all of whom particularly distinguished themselves on the occasion in question.

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The Board of Trade have awarded a binocular glass to Captain Pablo Monterola, master of the Spanish steamship *Rivera*, of Barcelona, in recognition of his humanity and kindness to a portion

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of the crew of the British barque *Wyre*, of Liverpool, whom he picked up at sea, and landed at Dover.

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THE Board of Trade have awarded their silver medal to Frederick Hill, late fireman on board the steamship *Adjutant*, of Leith, in recognition of his gallant conduct in jumping overboard with all his clothes on in a very heavy sea on the occasion of the stranding of that vessel of Tigre Point, Malta, and rescuing two of the crew of that vessel who had been thrown into the water by the capsizing of the lifeboat.

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THE Board of Trade have awarded a binocular glass to Captain Philpot, master of the French steamship *Raoul Godard*, of Nantes, in recognition of his humanity and kindness to the shipwrecked crew of the steamship *Cornwall*, of Cardiff, whom he rescued at sea on the 18th December last.

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HER MAJESTY'S GOVERNMENT have awarded a gold medal to Si Mahomed Ben Boaza, and a silver medal to Lasen Uld Rais Zimori, natives of Daralbaida, Morocco, in recognition of their gallant conduct in rescuing, at the risk of their own lives, the crew of a boat belonging to the British schooner *Jasper*, which was capsized, when approaching the shore at Daralbaida, by the heavy surf. Her Majesty's Government have also awarded a piece of plate to Mr. Arturo Pilto, a native of Gibraltar, who also rendered valuable services on this occasion.

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### OFFICIAL INQUIRIES AT HOME, 1884.

2146. *Thetis*, s.s.; built at Sunderland, 1866; owned by Mr. J. Waite and others; tonnage, 581; the Tyne to Blyth; water ballast; lost on Seaton Sea Rocks, Blyth, February 26, 1884. Inquiry held at North Shields, March 28, 1884, before Stevenson and Cleugh, Justices; Hight and Beasley, N.A. Master in default for shaping too fine a course, and neglecting to use the lead. Certificate not dealt with.

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2147. *Kitty*, brig; built at Whitehaven, 1765; owned by Mr. C. Fisher and others; tonnage, 130; Dieppe to Runcorn; flint, &c.; supposed to have foundered at sea. Inquiry held at Liverpool, April 8, 1884, before Rothery, Wreck Commissioner; Powell and Anderson, N.A. When leaving port in good and seaworthy condition, and not overladen. No evidence as to cause of loss.

2155. *Souvenir*, barque; built at Nova Scotia, 1876; owned by Mr. W. D. Lovitt; tonnage, 828; St. John's, N.B., to Liverpool; deals; abandoned at sea, March 17, 1884. Inquiry held at Liverpool, April 23, 1884, before Raffles, Judge; Methven and Wilson, N.A. Encountered very severe weather after leaving St. John's, causing her to strain and labour so much that she became waterlogged. Not prematurely abandoned.

2156. *Aristocrat*, s.s.; built at Sunderland, 1872; owned by Mr. B. Cochrane and others; tonnage, 956; Alexandria to Hull; grain; lost on the Basse Occidentale des Pierres Vertes Rocks, coast of France, March 17, 1884. Inquiry held at North Shields, April 18, 1884, before Jackson and Tully, N.A.; Ward and Vaux, N.A. Master in default for making no allowance for drift or tide, whilst engines were stopped for repairs, and for neglecting use of lead. Certificate suspended for three months.

2157. *Scotia*, barque; built at Nova Scotia, 1856; owned by by Mr. G. C. Pecket; tonnage, 472; Tyne to Garracha, Spain; coals and coke; stranded on Hasbro' Sands, March 15, 1884. Inquiry held at Great Yarmouth, April 24, 1884, before Stone and Brown, Justices; Comyn and Pattison, N.A. Casualty due to helmsman mistaking master's order, and putting his helm hard-a-starboard, instead of hard-a-port. Master and mate to blame. Certificates not dealt with.

2158. *Aberaman*, ship; built at South Stockton, 1875; owned by Mr. W. Fraser and others; tonnage, 1090; San Francisco to Falmouth; grain. Supposed to have foundered at sea. Inquiry held at Westminster, April 25, 1884, before Rothery, Wreck Commissioner; Curling and Kiddle, N.A. In good and seaworthy condition when leaving port, but too deeply laden for time of year.

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2159. *Thomas Adams*, s.s.; built at Middlesboro', 1883; owned by Mr. T. C. Lawrence and others; tonnage, 510; Hamburgh to Greenock; sugar; abandoned at sea, March 21, 1884, when loss of life ensued. Inquiry held at Westminster, April 22, 1884, before Rothery, Wreck Commissioner; Castle, Ronaldson, Pickard and Hallett, N.A. Casualty caused by vessel having sprung a leak. Abandonment justifiable.

2163. *Burns*, s.s.; built at Hartlepool, 1882; owned by Mr. S. J. Glover and others; tonnage, 1,425; Aden to Suakim; general cargo; lost on reefs off Suakim, October 7, 1883. Inquiry held at Westminster, April 30, 1884, before Rothery, Wreck Commissioner; Ronaldson and Kennedy, N.A. Casualty due to the reef on which vessel was lost not being laid down on the chart. No blame attached to master.

2164. *Balbec*, s.s.; built at Dumbarton, 1853; owned by Cunard Steamship Company; tonnage, 484; Liverpool to Havre; passengers and cargo; lost by striking some submerged substance near the Longships, March 28, 1884. Inquiry held at Liverpool, April 30, 1884, before Raffles, Judge; Hight and Anderson, N.A. Master not in default. After striking, master beached vessel in Mill Bay to save life, where she went to pieces.

2165. *Electric*, s.s., and *Eduardo*, s.s.; former built at Glasgow, 1863; owned by Belfast Steamship Company; tonnage, 261; Liverpool to Belfast; passengers and cargo; the latter a Spanish vessel bound to Liverpool from Bilbao; tonnage, 1,246. In collision at mouth of Mersey, April 10, 1884. Collision took place in mid-channel. Master of *Electric* free from blame, *Eduardo* in charge of Pilot, who acted to the best of his judgment.

2169. *Dunnerdale*, barque; built at Birkenhead, 1867; owned by Mr. R. Davies and others; tonnage, 1,066; San Francisco to Queenstown; wheat in bags; touched on the Galloper Sands, April 2, 1884, but no material injury was done to ship. Inquiry held at Liverpool, May 6, 1884, before Raffles, Judge; Parfitt and Hyde, N.A. Stranding caused by master and pilot making insufficient allowance for set of tide.

2170. *Septimus*, brigantine; built at Prince Edward Island, 1869; owned by Messrs. McCalmont and King; tonnage, 149;

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Cork to Swansea; patent manure; lost near Ram Point, County Cork, March 12, 1884. Inquiry held at Belfast, May 5, 1884, before Forbes, Judge; Beasley, Pickard, and Harley, N.A. Master to blame for neglecting to let go his anchor when cast off by the tug. Reprimanded; and the master of tug also much to blame for casting off vessel without warning.

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OFFICIAL INQUIRIES ABROAD, 1884.

2148. *Brechin Castle*, ship; abandoned at sea, January 5, 1884. Inquiry held at Rangoon, February 27, 1884. Abandonment justifiable.

2149. *Charles Edward*, s.s.; stranded on Motu Ngarn, off Alligator Point, December 28, 1883. Inquiry held at Nelson, N.Z., December 29, 1883. Master intoxicated. Certificate suspended for three months.

2150. *Douglas*, s.s.; stranded on Airedale Reef, November 6, 1883. Inquiry held at Auckland, N.Z. Master in default for careless navigation.

2151. *Fusilier*, barque; lost on Turakina Beach, January 16, 1884. Inquiry held at Wellington, N.Z., February 7, 1884. Accident due to heavy weather.

2152. *Triumph*, s.s.; lost on Tiri Tiri Islands, November 29, 1883. Inquiry held at Auckland, N.Z., January 7, 1884. Master in default for sleeping whilst on duty on the bridge. Certificate suspended for three years. Chief mate also to blame for neglecting to keep a good look-out. Certificate suspended for six months.

2153. *Newcomen*, s.s.; stranded in Port Adelaide River, March 3, 1884. Inquiry held at Adelaide, March 5, 1884. Pilot in fault for placing tug alongside instead of astern. Certificate suspended for two months.

2154. *Oleander*, barque; abandoned at sea, March 1, 1884. Inquiry held at Freemantle, March 6, 1884. Master imprudent in not endeavouring to return when he found the leak increasing.

2160. *Richmond*, s.s.; lost at Port Macquarie, January 21, 1884. Inquiry held at Sydney, February 18, 1884. Loss due to there being insufficient water on the bar.

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2161. *Advance*, schooner; lost in Botany Bay, February 11, 1884. Inquiry held at Sydney, February 25, 1884. Loss caused by vessel missing stays, and the chain parting when brought up. Master free from blame.

2162. *Rajanatlianuhar*, s.s.; lost in Gulf of Siam, March 1, 1884. Inquiry held March 17, 1884. Casualty due to striking on an unknown rock.

2166. *Carnarvon Castle*, barque; stranded in Port Adelaide River. Inquiry held at Adelaide, March 20, 1884. Pilot to blame for not anchoring when wind fell light.

2167. *Tenterden*, s.s.; grounded in Port Adelaide River. Inquiry held at Adelaide, March 20, 1884. Master guilty of error of judgment. Cautioned to be more careful in future.

2168. *Neera*, s.s.; lost on reef near Suakim. Naval Court held at Alexandria, April 29, 1884. Struck on reef whilst in charge of pilot.

2171. *Yotsai*, s.s.; damaged by explosion of boiler, February 24, 1884, when loss of life ensued. Inquiry held at Hong Kong, March 26, 1884. Casualty caused by too much pressure in starboard boiler, the safety valves having become immovably fixed.

2172. *Strathearn* and *Grassmere*; in collision, February 4, 1884. Naval Court held at San Francisco, February 13, 1884. Master of *Strathearn* in fault. Reprimanded.

2173. *Queenscliffe*, s.s.; stranded on Anonyma Shoal, February 9, 1884, when one hand was drowned. Inquiry held at Melbourne, February 19, 1884. Master to blame for navigating at full speed in a dense fog. Certificate suspended for three months.

2174. *Knoowarra*, s.s.; touched on Cliffy Island, February 21, 1884. Inquiry held at Melbourne, February 29, 1884. Casualty caused by master mistaking his position in consequence of fog.

2175. *Falcon*, ketch; foundered at sea, February 27, 1884. Inquiry held at Wanganin, New Zealand, March 11, 1884. Master to blame. Censured.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. VII.

JULY, 1884.

## CHARTS AND SAILING DIRECTIONS.

IT has come to be a very prevalent opinion—one also carefully fostered by various officers of the Department—that the Admiralty are and have always been the sole depositories of that wide range of information necessary for the production of efficient charts, and that as such, they have become the chart producers for the whole world. So at least we learn from a Blue Book published in 1877. But this is a great mistake. The Admiralty can only be an authority for those parts where a survey has been executed by the ships of the Royal Navy, or by ships specially hired for the purpose of surveying. To this extent they are the undoubted standard of reference for the entire British Empire with its numerous colonies and dependencies. It is true that our ships have been very advantageously employed in this service on detached parts of the coasts of Africa, China, and South America, as well as in the Mediterranean and the great Eastern Archipelago; but this only in common with the surveying ships of foreign maritime powers. A glance through the "catalogue of Admiralty charts" will sufficiently show that civilised



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maritime nations almost invariably issue surveys of their own coasts, and it is now well-known that many of them send exploring and surveying ships into various parts of the great oceans. The "catalogue" will also show to what extent the Admiralty are indebted to foreign surveys. Now though we are English, and would like to go where we chose, international law forbids us to trespass on our neighbours' territory within certain limits, and thus we must remain satisfied with the imperfect surveys of certain parts of even the coast of Europe.

The case being as here stated, Admiralty surveys must at the best, except for our own coasts and waters, be a kind of patchwork—which however can be well supplemented and completed by compilation from foreign work. It is in this direction that the Admiralty and the private publishers are competitors, and it is a fatuous idea to suppose that the latter compile on the basis of the former. We feel assured that both alike go to original sources of information, and that there are as many foreign charts —from original surveys—in the hands of private firms as on the shelves of the Admiralty. Moreover all general charts by whomsoever produced must of necessity be the results of compilation, and in this case they who pay sufficiently well to insure good work in the draughting and engraving, and who best supervise the execution and finish, will secure the best and most accurate results.

It may be set down as an axiom that if a chart were strictly accurate in every detail to-day, it might not be so to-morrow. But nevertheless the navigator has a right to expect the latest corrections up to the day he makes his purchase. He can certainly procure such charts in London, but nowhere else; and for the simple reason that the *stock in the various outports is not corrected day by day* as are the charts of the Admiralty and of the private publishers while they are in their own hands. But the difficulty of the outports is not insuperable, although inexpert hands and heads could not be trusted to make the corrections. To these important matters, as well as to others akin, we shall address ourselves next month.

The Marine Department of the Board of Trade may be supposed to have taken into its consideration the relative merits of the various

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charts by which ships are navigated. Hence, in the notice to shipowners and agents in respect to "Incorrect Charts," it is merely asserted that "the attention of the Board of Trade has frequently been called to cases in which British vessels have been endangered or wrecked through masters attempting to navigate them by means of antiquated or otherwise defective charts," and then it proceeds with the following caution :—"The Board of Trade desire, therefore, to direct the especial attention of shipowners and their servants and agents to the necessity of seeing that the charts taken or sent on board their ships are corrected down to the time of sailing. Neglect to supply a ship with proper charts will in future be brought prominently before the Court of Inquiry in the event of a wreck occurring from that cause."

Many ineffectual attempts have been made at different times to secure the exclusive use of Admiralty charts for the Mercantile Marine; and the reply of Mr. Baring on one occasion to a member of the House of Commons was significant—"that it would be an utterly unjust, as well as too great an, interference with private enterprise and competition." It may indeed be a question whether the co-existence of the Hydrographic Office and the private firms, as chart publishers, does not insure greater accuracy than could otherwise be attained. To crush out the "blue-backs" implies buying up the rights and good will of the publishers. This we should not recommend. Years ago one of the Hydrographers to the Admiralty said to us, when referring to the private chart publishers—"we all live in glass houses." This is true, and were there no one, from a critical stand point, to look into the "glass-houses"! well, we wont say, "then the deluge"; but under such a state of things, charts, as instruments of navigation, would not be as perfect as they now are.

The Admiralty publish very elaborate and carefully compiled sailing directions for the navigation of various coasts and seas, and new editions of the same when the old ones have run out. It may be taken as granted that these are correct up to the time of issue. The same infirmity, however, appertains to these as to charts, even after the lapse of only a month or two; and if so, what is the use of "Pilots" and "Directories" from four to seven years'



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old, without "addenda" to indicate the changes that have occurred since the publication of the last edition—and thus periodically to bring up the information to date. The private publishers generally issue *addenda* to their sailing directions—not so frequently perhaps as they should do—still, they do it occasionally, but the Admiralty, never.

The Admiralty probably think that their "Hydrographic Notices" issued to the extent of forty to sixty during the year are sufficient for the purpose of keeping their publications correct. So they would be if it were possible to obtain them in sufficient quantities, —and especially as the part of the world to which each notice relates is very conspicuously indicated, together with the number or order of rotation. The significant advice that "the information contained in this notice is to be carefully considered, to be noted in the sailing directions, and compared with the chart when the ship is navigating the parts to which it refers," is probably given for the benefit of ships of the Royal Navy that may receive a supply of the notices. It would be equally advantageous to the masters of the Mercantile Marine could they also be supplied with them, by purchase, as are the similar notices issued by foreign governments. But there is undoubtedly a scarcity of those issued by our Hydrographic Office, and to such an extent that they can rarely be procured through any of the chart agents. In fact we have heard it stated that the "Hydrographic Notices" are not intended for general distribution.

It has been said that the supplies voted for printing, and the amount of type allowed to the Hydrographic Department of the Admiralty are strictly limited, so that the office cannot do all the publishing that it knows should be done. If this be really so, surely it is only necessary that an influential member of the House of Commons should properly represent the case, and a Parliament like ours, ordinarily so lavish in its expenditure, would find what is absolutely requisite for the purposes of safe navigation, and the extension of trade and commerce. We should not be behind other maritime nations; and yet we are. On lately ordering the French sailing directions for the "West Coast of France" in two vols., and directions for the "Scattered Islands of the Southern Indian

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Ocean," the first published in 1869 and the last in 1879, they came, perfected to date through the instrumentality of numerous Hydrographic Notices and various slips of printed matter interleaved in such manner as to correct the errors of the original publication, and which had occurred through the lapse of time. In the same manner our own Admiralty should make a point of issuing all their "Pilots" or "Directories" perfected from time to time by such Hydrographic Notices as appertain respectively to each.

It is not our present purpose to occupy pages in showing how the inaccuracies of charts arise, for then we should require more space to point out that many of these inaccuracies are scarcely such as should imperil the safety of the ship. We have reason to believe, however, that on the whole the charts are better than is the navigation. Sir William Thomson in an address "On the six gateways of knowledge," delivered at Birmingham, in October last, before the members of the Midland Institute, when referring to the practical value of logic, aptly said that "more ships have been wrecked through bad logic than by bad seamanship. When the captain writes down in his log . . . . the ship's place is so-and-so, he means that it is the most probable position—the position which, according to previous observations, he thinks is the most probable. After that, supposing no sights of sun, or stars, or land to be had, careful observation of speed and direction shows, by simple reckoning (called technically the dead reckoning), where the ship is next day. But sailors too often forget that what they put down in the log was not the ship's place, but what to their then knowledge was the most probable position of the ship, and they keep running on as if it was the true position. They forget the meaning of the very words in which they have made their entry in the log, and through that bad logic more ships have been run on the rocks than by any other carelessness or bad seamanship. It is bad logic that leads to trusting to the dead reckoning, in running a course at sea; and it is that bad logic which is the cause of those terribly frequent wrecks of steamers, otherwise well conducted, in cloudy but perfectly fine weather, running on rocks at the end of a long voyage." Shipmasters would do well to seriously consider the truth conveyed in these observations.

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## SHIPPING LAW.—FINAL JUDGMENTS.

### The "Arklow," 9 App. Cases (P.C.), 136.

THIS was a case of collision between two sailing ships, the *Bunin* from Havre to Baltimore, and the *Arklow*. The former vessel was close-hauled on the starboard-tack and the latter running free; the former vessel obeyed the regulations by keeping her course, and therefore, *prima facie*, if any vessel was to blame for the collision, it was the *Arklow;* but it appeared on the hearing and on the appeal that the *Bunin's* lights were not properly exhibited, and though in the Court below—the Vice-Admiralty Court of New Brunswick—the fact was held to be immaterial, the Privy Council on hearing the Appeal, decided that such an infringement of the regulations might by possibility have contributed to the collision, and therefore that the *Bunin* was to blame under the provisions of sec. 17 of the Merchant Shipping Act, 1873, and that as the absence of or irregularity in the lights would, in fact, require the *Arklow* to deliberate before deciding on the manœuvre to be adopted, she could not be held to blame under the circumstances, even if the delay in manœuvring brought about the collision. The lesson to all concerned in shipping is one which it seems necessary to teach "line upon line, precept upon precept," and in the most expensive manner, that the penny wisdom of confining the lamps to a single set which require to be taken in, even for a moment, to trim, instead of having a duplicate set trimmed and ready to be lighted to replace them during their temporary removal, is pound foolishness, causing the expense of a collision to fall on the economical party. Those interested, whether underwriters, shipowners or seafaring men, have an obvious remedy in a provision that a ship should not be considered seaworthy without a double set of lights, and that, as a matter of discipline, no light should ever be unshipped unless replaced by another instantaneously.

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"BIRRELL *v.* DYER," 9 APP. CASES (H.L.), 365.

This case which came before the House of Lords on Appeal from Scotland, decides that the words "St. Lawrence" in the clause of a true policy of Marine Insurance, "warranted no St. Lawrence between the 1st October and 1st April," refer to both the river and the gulf of that name, and that, therefore, if a vessel be found within the prohibited area during that time her policy is rendered void. The lesson again to all concerned is to enforce the proverb "penny wise and pound foolish," the ambiguity of expression in the policy must have cost even the successful parties—the underwriters—a very considerable sum in costs in fighting the case up to the House of Lords, whilst as to the wretched shipowner, whatever his views of the St. Lawrence may have been before, he certainly will have reason if he has any capital left to see that his policies are carefully drawn, or to avoid both gulf and river for the future as he has had to pay the premium, has lost his ship, and has two terrific bills of costs to pay, whereas the writing or printing of three or four additional words in the policy such as "river" or "gulf of" or "river or gulf of" would have obviated the whole matter.

THE "RIO TINTO," 9 APP. CASES (P.C.), 356.

This case, which came before the Privy Council on Appeal from the Vice-Admiralty Court of Gibraltar, is one of considerable interest to shipowners of all countries, and to those who supply the articles commonly called "necessaries" to ships in British Colonies.

The fact was that the *Rio Tinto*, a British steamer, belonging to and commanded by one George Hough, and trading in the Mediterranean, called from time to time during 1879 and 1880 at Gibraltar to coal, and got supplies of the value of about £375 on credit; subsequently the vessel changed hands twice, no notice being given to the purchaser on the first occasion of the unpaid debt, and consequently no notice being given by him to the second purchasers. Whilst in the hands of her second purchasers, the *Rio Tinto*, at the end of 1881, again put into Gibraltar, and doubtless much to the surprise

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of her then master and of her owners when they heard of it, she was arrested in the Vice-Admiralty Court at the suit of the unpaid coal merchant. The coal merchant's case was that coals were "necessaries" for a steamship, and that therefore the claim was one which the Vice-Admiralty Court could entertain under the Vice-Admiralty Court Act, 1863 (26 & 27 Vict., c. 24), sec. 10, sub-sec. 10, by which jurisdiction is given in respect of "claims for necessaries supplied, in the possession in which the Court is established, to any ship of which no owner or part owner is domiciled within the possession at the time of the necessaries being supplied." The shipowners, on the other hand, contended:—(1) That the Statute in question did not confer a "maritime lien," *i.e.*, did not make the claim to attach to the ship in such a way as to follow her into the hands of fresh owners at all. Still less when those fresh owners had no notice or knowledge of the existence of the claim; and (2) That even if such a lien was created by the Statute that the claimant had lost it by "laches," that is, by not prosecuting his claim with due diligence, as the ship had been at Gibraltar since the coals in question were supplied, and before she changed hands, and had been supplied with other coals which had been paid for, the coal merchant requiring a guarantee before he supplied them.

The Judge of the Vice-Admiralty Court decided in favour of the coal merchant, and the shipowners appealed to the Privy Council, who held, in a judgment delivered by Sir J. Hannen, that the Act in question did not confer a "maritime lien," and, therefore, that the claim would not lie against a subsequent purchaser without notice, and on that sufficient ground reversed the decision of the Vice-Admiralty Court.

By this decision, the perils of shipowning are lessened. It would indeed have been hard if a person who bought a steamship on its merits and publicly, should unwittingly, by so doing, have rendered himself liable to pay for all the coals supplied in all the British Colonial ports she had coaled at for years past. And as to coal merchants and others who supply stores abroad, they have a sufficient remedy in their own hands; they can refuse to supply the goods except on security, or on being paid by a

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bottomry bond; and can enforce payment, if they have neglected these obvious methods in the first instance, by arresting the ship before her departure, to obtain payment, and so, even at the last moment, compel the master to satisfy their claim in some way or other.

There is, however, another point in the case, which was not taken by the appellants, but which has since been discussed in the Court of Appeal, as to whether in any case goods supplied can be "necessaries" when they are supplied to a ship when her owner is present, as he is under no obligation to sail his ship, but can, however detrimental to his interests it may be, sell her, or lay her up, or let her rot. She is not like a child or a wife, whom there is a legal obligation to support, but as this point has not been decided by a final Court of Appeal, it is only perhaps necessary to caution those who supply ships as to doing so on the supposed credit of the ship when the owner is present, and to point out to shipowners that if impecunious, it may be that their credit is better if they keep away, than if they are on the spot.

"THE QUEEN *v.* WILLIAMS," 9 APP. CASES (P.C.), 418.

This case also decided by the Privy Council, but on appeal from the Common Law Court of Appeal of New Zealand, is important, perhaps especially to the Colonial Trade, as in many of the colonies the Government undertake, as a part of the duty of the Executive, large harbour works, as defining the liabilities of the Government in such a case for damage sustained by a vessel using the works.

The steamship *Westport* was in the constant habit of using the Government harbour of Westport in New Zealand; the harbour is free of toll, but its navigation is subject to regulations made by the Government and its officials, and tolls are charged by the Government for the use of the wharves and other harbour accommodation. The *Westport*, whilst using the wharves, settled with the fall of tide on a snag at the bottom, which holed her, so that she filled as the tide rose. It appeared that the harbour master knew of the existence of the snag, but that he had not ordered the *Westport* to the berth, which it rendered dangerous for a vessel of her draught.

The jury found against the Government, and the present question

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arose on an application for a new trial, which had been refused by the Courts in New Zealand. The Privy Council affirmed the decision of those Courts on the ground that the duties of the Government, if it undertakes such functions, are practically the same as those of private individuals, and that the Crown Suit's Act, 1881 (N.Z.), sec. 37, rendered them liable to a petition of right to the same extent as an individual would be in a similar case to an action.

"UNION STEAMSHIP COMPANY OF NEW ZEALAND *v.* MELBOURNE HARBOUR TRUST COMMISSIONERS," 9 APP. CASES (P.C.), 365.

It is not necessary to do more than just mention this case here, as though relating to ships, the appeal was on a technical point of practice not confined to shipping cases.

The plaintiffs' ship entering Melbourne Harbour fouled an anchor or cable of a dredger belonging to the Harbour Commissioners, and sustained serious damage, and brought an action against the Commissioners. The jury found that the anchor was negligently placed, and that, therefore, the defendants were liable; but it appeared that no notice of action had been given to the Commissioners, and the Commissioners claimed that a month's notice of action was, under the Act—The Melbourne Harbour Trust Act, 1876 (Vic.)—a necessary preliminary to the action being brought, and this contention was upheld by the Privy Council on the ground that the word "person" used in the Act included the Commissioners themselves, and so they got rid of their liability on the technical point. The moral is obvious; to be careful you have the best advice before proceeding against any "person" especially in a British Colony and State, more so, when the defendant is acting in virtue of some Act of Parliament, either local or general, public or private, Imperial or Colonial.

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## LIGHTHOUSE ILLUMINANTS.

IN the *Nautical Magazine* for August, 1883, we referred to the circumstances under which the President of the Board of Trade had felt it necessary to dissolve the Committee which had been formed for the purpose of determining the relative values of oil, gas and electricity as light-house illuminants, and we expressed an opinion that although the circumstances may perhaps have justified the dissolution of the Committee, they certainly did not justify the abandonment of the inquiry, having regard to the important issues involved and the maritime interests concerned.

We have observed, therefore, with considerable satisfaction that the Board of Trade and the Trinity House have not allowed the matter to be permanently shelved, but that the investigation is now being made in a practical and complete manner under the immediate direction of the Trinity House (a body in whom the maritime world have full confidence), aided by the advice and assistance of the Lighthouse Boards of Scotland and Ireland.

For carrying out this important inquiry a special Committee of the members of the Trinity House Corporation has been formed, consisting of Captain Sydney Webb (Deputy Master of the Corporation) Chairman; Captain Nisbet, Captain Weller, Captain Burne, Captain Vyvyan, Admiral Sir Leopold M'Clintock, and Mr. Inglis, the Secretary to the Corporation, with Mr. E. Price Edwards as Secretary to the Committee. The Committee is also assisted by Sir James Douglass, the engineer to the Corporation; by Mr. A. Vernon Harcourt, M.A., F.R.S., deputed by the Board of Trade to watch the experiments; by Mr. H. B. Dixon, M.A., of Trinity College, Oxford, to whom the photometric observations are entrusted; Mr. Thos. Stevenson, V.P.R.S.E., Engineer of the Scotch Lighthouse Board; and Dr. Ball, F.R.S., Astronomer Royal of Ireland and Scientific Adviser to the Commissioners of Irish Lights.

It being evident that the inquiry must of necessity consist chiefly of experimental comparisons of the lights under varying conditions,

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the locality selected for making the trials, the South Foreland lighthouse station near Dover, was chosen because it offered special facilities for the purpose. There being two lighthouses at this station lighted by electricity, for which motive power is necessary, the surplus power which must be provided to ensure certainty in keeping up the lights, is available for the experimental electric light. The engineer in charge of the station is a skilled mechanic, and his subordinates are all trained hands. The situation enables provision to be made for viewing the lights from sea at any distance, and also for several miles on land, the country round about being mostly open downs without trees or hedges.

It is worthy of note that the South Foreland lighthouses, which were originally illuminated by means of coal fires, were the first in which electricity—carbon in a more refined and more highly intensified form—was employed as an illuminant. This was in 1857, when Mr. F. H. Holmes first submitted a system of lighthouse illumination by electricity to the Trinity House, and on Professor Faraday's recommendation received permission to set up his apparatus experimentally in the high light, the experiment being afterwards extended to the low light. England was thus the first to use electricity for lighthouse illumination. The trials were concluded at South Foreland in 1859, when the oil light was resumed, but the knowledge gained respecting the suitability of the electric light for lighthouses was most valuable, and before long brought forth fruit. "With regard to the application of electricity to lighthouse purposes, the course of events was this: The Dungeness light was introduced on January 31, 1862; the light at La Hève on the French Coast, on December 26, 1863, or nearly two years later. But Faraday's experimental trial at the South Foreland, preceded the lighting of Dungeness by more than two years. The electric light was afterwards established at Cape Grisnez. It was started at Souter Point on January 11, 1871; and at the South Foreland on January 1st, 1872. At the Lizard, which probably enjoys the newest and most powerful development of the electric light, it began to shine on January 1, 1878." The machinery and apparatus set up in 1872 for the two lights at South Foreland consist of four of Professor Holmes's magneto-electric machines—two for the high and two for the low light—which are

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both powerful and safe, producing a low tension current not exceeding 60 volts. They are, moreover, very reliable, costing little or nothing for repair. There are two horizontal steam-engines of the single cylinder type by Messrs. Hunter and English, each of 10-horse power nominal, but capable of developing 30-horse power each. Steam is supplied from two Cornish boilers, each 15 feet long by 6 feet diameter, of which one is kept in reserve, as is also one of the engines, a single engine sufficing to drive the four Holmes's machines, and those used in the experiments to which we shall presently refer.

For the exhibition of the experimental lights, three temporary wooden towers have been erected in a line bearing north-west (*i.e.*, landward) from the permanent high light. These towers are marked A, B, and C, and are respectively used for the electric, the gas, and the oil light. Tower A is 245 feet from the high light, and tower B 180 feet from A ; tower C, being the same distance from B. The focal plane of all the towers is 15 feet below that of the electric high light, which is 380 feet above sea level. In A tower three arc lamps of Baron de Meritens, of Paris, are superposed, each lamp being placed in the focus of lenses for showing either a fixed or revolving light, the lenses being so fitted, that one set can be substituted for the other almost immediately. When all the three lamps are in operation a magnificent column of light is formed, the effect of which at a distance is very remarkable. The carbons in use are the new Berlin Core Carbons, of Messrs. Siemens', one inch in diameter, which are found to consume more steadily than other kinds which have been tried. The three machines for producing the currents are placed in the engine-house with the others, and are driven by the engines used for the Holmes's machines. Each of the De Meritens' machines is arranged for working at 1-5th, 2-5ths, 3-5ths, and at full power, the estimated intensity of the light from each machine at those powers being respectively 6,000, 12,000, 18,000, and 30,000 candles. The machines can either be worked singly or coupled up. Like the Holmes' machines, those of De Meritens produce a low tension current, and are found to be very reliable in operation and inexpensive in maintenance.

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For the illumination of B tower the gas system of Mr. J. R. Wigham, of Dublin, is employed, a system which is applied in ten of the lighthouses on the Irish coast.

The necessary gasworks were put up and the gas illumination is now being carried out under Mr. Wigham's supervision. The gas-producing apparatus consists of a small retort-house fitted with two benches of three retorts, the necessary purifiers, and a holder capable of containing 4,500 cubic feet of gas. The gas is passed through a meter placed outside the tower to the burners within it, which are four in number. Each burner is composed of a series of concentric rings of jets, and the light can be started with a *minimum* power of 28 jets, and increased by gradations of 20 jets up to 108 jets, the full power of each burner, at which it is said to develope 3,000 candle power. There are four of these burners superposed, and they can be used either singly or together, the lights being designated uniform, biform, triform, and quadriform, according to the number of burners in use at the same time. The object of the variations of the power in the lights in all cases is to meet the varying requirements of the atmosphere.

Suitable lens arrangements for fixed and revolving lights are provided for the four superposed gas flames.

In tower C oil lights are used, produced by means of burners of the recognized Trinity House pattern. For this purpose nothing further is necessary than a tank outside the tower containing a store of Scotch paraffin and the lamps and burners in the tower. The oil is supplied to the burners from the reservoir under slight pressure by means of an arrangement similar to that adopted in obtaining hydraulic power, oil, of course, taking the place of water. The burners at present in use have each six concentric wicks, each burner developing 720 candle power; but Sir James Douglass is preparing another burner of much higher power, having seven wicks, which will shortly be tried. The burners are arranged in three stages, with suitable lens arrangements for each burner, and either a uniform, a biform, or a triform light can be exhibited as required. The burners are in duplicate on each stage, and by an ingenious arrangement the first lamp can be shunted out of position if necessary, and the second one lighted and shunted into its place without any

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appreciable loss of time. Sir James Douglass has also devised a very simple but effective arrangement for ventilating lighthouses by means of which the heated air is carried rapidly off, while the atmosphere of the lighthouse is kept perfectly steady to a very high elevation in the coned roof.

Such are the means provided for producing the various lights. For testing them, carefully elaborated arrangements have been made. An overland route has been laid down as a line of observation for a distance of 2½ miles from the towers in the direction of Deal, and stakes have been driven at every 100 feet. At half-a-mile from the towers on this route is hut No. 1 for taking photometric observations, and this is more particularly intended for fog work. At 1½ mile we come upon hut No. 2, which is likewise fitted with photometric apparatus. At the limit of the range is a third hut, each hut being conveniently fitted up for the residence of the official in charge. Arrangements have also been made for observations to be taken at the various Coastguard stations within the focal area, at Ramsgate and other contiguous places, and at various points out at sea, including the Gull and Varne light-vessels, which are respectively eight miles N.E. and 12 miles S.W. distant from South Foreland. The observers are supplied with books for recording their observations in tabular form, which will ultimately be collected and their contents collated for the information of the Committee. The books contain directions for recording observations, and we understand will, on application at the Trinity House, be furnished to any masters of vessels who frequently pass the South Foreland, and may be willing to assist in making observations on the lights. Observers are also provided with charts for land and sea observations, showing the illuminated areas to the north and south of the South Foreland. The experiments will occupy several months, probably five or six, during which every illuminant and variety of burner adapted for lighthouse illumination will be tested under every possible condition pertaining to itself and to the atmosphere.

To assist in the definite measurement of the value of the different large-sized flames, a new building, 380 feet long, about 8 feet wide, and 12 feet high, specially adapted for photometric trials, has been erected, and it is anticipated that important and exact

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results will be gained in measuring the powerful lights, for which very high candle powers have been claimed. This building is a permanent addition to the South Foreland establishment, and as no photometer room with so long a range is now in existence, it is probable that many a pretentious burner will be brought to its true bearings in this building.

It would be premature at present to make any assertions respecting the relative values of the lights, especially as the trials are likely to go on for months, and foggy weather has not been experienced to any extent. Fog of course is a most necessary element in the investigation, not only dense fog, but the various gradations of haze and mist which interfere with the penetrating power of a light. The experiments are in the first instance confined to the testing of apparatus and contrivances already in use. A further stage will be devoted to any other burners and appliances which shall be submitted to the Committee, and after inspection by them shall be adjudged suitable for lighthouse illumination.

The progress of these trials is being studiously watched by representatives of various maritime countries, and we shall look for the results with much interest, as being of the greatest importance to navigation generally, and as demonstrating the leading position which it is the privilege of our country to take in such matters.

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## SAFETY AT SEA; OR, COMPETITION AND QUALITY IN RELATION TO SHIPPING LEGISLATION.—II.

*To the Editor of the "Nautical Magazine."*

SIR,—I was reluctant to draw any positive conclusion from my argument in the letter published in your June number, because the subject dealt with being only a branch of a much wider one, which I believe to have been inadequately dealt with, but upon which I could not conveniently state my views in your columns, I feared that any specific recommendations I might make might be liable to misapprehension. On consideration I think I may be able to

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make clear the general principles of the policy I should be disposed to recommend. If competition has that sufficiency in the regulation of industry which some of the extreme theorists of the English school of economy, who alone maintain a strict logical consistency with the teaching of the entire school in relation to foreign competition, attribute to it, then all interference with competition is absurd and mischievous, and government in relation to industry should confine itself to the functions of a protective police.

I hold it to be demonstrated by experience that competition, left to itself, is thoroughly inefficient in regulating quality. I believe it can also be shown that it cannot possibly lead to a satisfactory distribution or consumption of wealth; but it is with the former of these positions alone that I have at present to do. This defect of competition appears to me to render State interference imperative in matters directly relating to life and health. My opinion with regard to shipping legislation, therefore, is that whatever regulations are required to supply the deficiencies of competition, ought to be applied without fear, or regard to the private susceptibilities of those subjected to them.

I have, however, a strong impression of the difficulties of interfering with competition, and I fear that some even of our free trade legislators inadequately appreciate those difficulties. The main difficulties are two. The first is that of framing regulations generally applicable that will not be either futile on the one hand, or oppressive on the other. This difficulty is admirably illustrated in the report published in your last number on "Collisions of steamers in fogs." The second difficulty is still more formidable. It is that of enforcing regulations, whether good or bad, when they are made. Officialism, though liable to offend by stiffness and pedantry, is dull and sleepy in its formality. It is, moreover, if I may use such a word, eminently wheedlable. Competition is sleepless, untiring, and absolutely unscrupulous as to means. Whenever a competitor makes up his mind to digest one scruple, he will find a comrade ready to digest another.

While, therefore, I am not prepared to assert that official supervision can be altogether dispensed with, I hold that, especially in matters involving expense as well as trouble, it cannot be trusted



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to compete with competition. The only sure mode of control is to throw the responsibility of doing right, under penalties that are likely to come home, upon those who are liable to the temptation to do wrong.

One recommendation of this mode of regulation is its elasticity. In dealing with those who know what adequate precautions are, it is not always necessary to define before-hand the precise precautions that must be taken. It is only necessary to submit it to competent judges afterwards. Thus in relation to speed during fogs, first-class steamers might be exempted from the restriction in open seas, without any definition of what constitutes a first-class steamer, the responsibility being thrown on the owners of having their vessels so appointed that their competency could not be challenged. The standard would naturally vary with the progress of improvement, and could be determined only by what was attainable.

But if this mode of regulation is to be made efficient, it must not be made oppressive, for regulations which err by excess or partiality will be defied, be the consequences what they may.

Now, if we are to have regulations that will be effective without being oppressive, we must protect the industry we regulate against unregulated competition. I know that the very word protection is hateful in the ears and odious to the eyes of economists, to whom nothing is so sacred as foreign competition. I know also that they have so far possessed the public with their own prejudices that the man is scarcely supposed to be sane who utters the word. But for this reason I must ask a little space, which I hope I shall not abuse, to expose the grounds of the necessity and to meet the objections that will be made to the validity of these grounds.

It is not a matter of conjecture, but of certainty, that to raise the question of protection, even in connection with that of safety, will be considered as beyond the bounds of "practical politics." The proposition, indeed, seems a simple one, and logically irresistible, that regulation and protection are correlative. Let us suppose that there were no such thing as foreign competition. Then any general regulations to which an industry was subjected, however they might hamper production or distribution, would not interfere with freedom of competition, in any real sense, because they would be imposed

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on all competitors alike. But if there is one class of competitors that cannot be controlled, or can only be so imperfectly, then it is unjust and oppressive to subject the others to control, unless these are put under some equivalent disadvantage. Now dues or taxation in some form is the only effectual control a Government can exercise over foreign competitors.

In the case of shipping it is manifest that efficient regulations cannot be made to bind foreign ships. I shall mention only two points in illustration of this. The first is that of insurance. We certainly cannot control the insurance of foreign ships. The only question is if we can efficiently control that of our own. It is, however, desirable that insurance should be restricted; and as this matter, although not directly connected with competition, illustrates the nature of competition by illustrating that of competitors, it may be worth while to pause on it for a moment. It is said that as insurance does not pay, no one would insure to excess except with a fraudulent intention, and, consequently, the charge of over-insurance has been interpreted as a charge of fraud against ship-owners. Now, it is true that insurance is not remunerative. Essentially it is nothing but a distribution of actual losses among those who are liable to loss through an agency which charges expenses and earns a profit on the work of distribution.

But if this were to operate generally against the insurance of profits, it ought, except in cases of strict necessity, to operate against insurance altogether. If a man had a ship worth £20,000, and owed £20,000 on it, he would be justified in insuring it, even at a heavy premium. Or if the profit on the £20,000 were absolutely needed to support his business, insurance would still be a necessary charge upon his business. But suppose a man has £20,000 of spare capital invested in a ship, there is no absolute reason why he should have £20,000 of capital more than £10,000, or £30,000, and the reason that would avail him for insuring his ship for one of these sums would equally avail for either of the others. If he were to reason strictly, he would say, "The premium I have to pay is greater in proportion than the risk I have to run, therefore I will not insure at all." But as a man is not hindered from betting on a horse because he has to pay a premium



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to a bookmaker, so he is not hindered from over-insurance by the profit of the underwriter; and the insurance of a good margin is liable to make a man more comfortable as to the loss of his property than it is always expedient that he ought to be.

The other point is that of manning. If competition leads to undermanning it is clear that this ought to be prevented. Mr. Chamberlain has declined to meddle directly with this matter, and it is easy to see why he shrinks from doing so. It would be impossible to control foreign ships, and it would be too direct an interference with competition to control our own exclusively. The reason Mr. Chamberlain himself gives for non-interference, I take leave to say, is not in accordance with sound observation. If competition does not itself tend to fix a uniform standard of manning, and nobody pretends it does, the mere fixing of an official minimum, would not make that minimum the maximum. But the Board of Trade, as you announce, has intimated that they intend to take insufficient manning into account as a cause of accidents, and this is precisely the same as direct interference.

But will the reasonableness of balancing restriction by protection be acknowledged by our authorities? Look at what we have already done. We prohibit women and children from working in our factories for more than 10 hours a day, and we refuse to touch with a farthing of duty the cloth made by foreign women and children, who may work 12 or 14 hours. It will be said in reply to this that both our free trade and our factory legislation has been successful, and this is how we usually justify anomalies. But the justification is an absurdity. All sound practice is in consonance with sound theory, and no two contradictory theories can be sound. That we have legislated upon contradictory principles with impunity is no justification of the wisdom or prescience of our legislators. It does not even prove that they were deliberately conscious of what they were doing. They have simply moved as they were driven by opposite currents of prejudiced opinion, and it is because one of the two opposite classes of measures has proved inspirative that one or other has not been destroyed by violent collision between them. For reasons, too numerous to indicate here, our manufactures have, in the home market at all events, enjoyed substantial

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immunity from foreign competition; but let that competition become a reality, and then it will be seen if unrestrained foreign competition can co-exist with restrained home production.

I know it will be said that we can also afford to despise the effects of foreign competition upon our shipping legislation. But the conditions are different. No branch of our industry has apparently suffered less up to the present time from foreign competition than either shipbuilding or shipowning. Any one, indeed, who can look below the surface of statistics can see that this immunity is due to temporary causes; but if it were permanent, it would not affect the present question. The immunity is an immunity only of the greater part, not of the whole of our trade, and that part which enjoys it most fully is precisely that which least requires control in the interests of safety. It will be said, I doubt not, that we can afford to lose any portion of our trade that would be affected by the most stringent regulations we might adopt for this purpose. That is not the question. It is not a question of the extent of our trade, but of the sincerity of our intention to protect it from undue risk. If foreign competition came to operate on our Factory Acts it would be a grand result of our benevolent policy if our puritanism would not allow us to work British women and children more than nine or ten hours a day, but would compel us to supersede their labour by that of French women and children working twelve hours a day. In like manner if we simply transfer the loss of life incident to our own trade from British to foreign ships, I do not say from British to foreign passengers, we shall not have done much in the cause of humanity.

It will also be said that we must adopt our own precautions, and allow other nations to adopt theirs. But this will not meet our case. It may be that there are other countries more stringent than ourselves; but there also are and will be others that are less so, and our law brings us into competition not only with the more, but with the less stringent. Nor does it require that they should be at the trouble to come to compete with us. Our own merchants have only to build ships in our own ports, and to register them under the flag of the least scrupulous power to frustrate our regulations, and how can even British sailors be prevented from sailing in them?

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These considerations would probably suffice to satisfy an unprejudiced inquirer, but as, unfortunately, I have not unprejudiced reasoners alone to deal with, and especially as the case under consideration is typical of others of even greater importance, I must proceed to enforce it by one or two arguments of a more aggressive kind. I have often observed with regret the readiness of our economical authorities to exult over the mere quantitative results of free trade, without fairly facing the conditions on which these results depend. I am not surprised that common people, whose opinions are mainly determined by habit, should be so impressed with the brilliant appearances of success which our policy presents on the surface as to be indifferent or hostile to any deeper examination of it; but if economists are not to see farther than common people; if they are simply to repeat, like parrots, the arguments with which the most ordinary observer can clench a demonstration from experience, for what purpose do they exist? I am as much as any of them an advocate of liberty, rightly understood; but I hold that in industry, as in other pursuits, and in the foreign as much as in the home relations of industry, the maximum of rational liberty can only consist with well considered and adequate regulation, and I regret that the excellent name of "free trade" should have been appropriated to an extreme and ill-digested theory, which has no claim to such a title.

I have formerly maintained that no advocate of competition *à outrance* had ever given, or could give, a rational explanation of a commercial crisis, and I have been greatly edified by the charming variety of theories of that phenomenon which events have since extorted from our economists.* Though differing in all other respects these theories all agree in one feature, in being laboured apologies for competition, and having as their main purpose the extenuation of its relation as a cause to industrial disorder or disorganization. That our authorities have not generally explained this ordinary industrial phenomenon is obvious from the disparity of their explanations. Hence it is obvious that they are not generally masters of

* I have reviewed these explanations in detail in a series of articles "On Industrial and Commercial Crisis," in *The Glasgow Herald*.

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the facts which they use for a common purpose. But while alluding to this indication of partiality, I shall here content myself with pointing out one or two of the minor mistakes of these authorities, which are pertinent to the present subject.

It is generally assumed by them that manufactures cannot be kept up to the mark in price and quality unless they are exposed to the competition of all the world. It has been especially urged against American protection that it deprives manufacturers of any motive for adopting industrial improvements introduced elsewhere. Now this is ignoring the effect of home competition. Surely if a better or cheaper article is to be produced by using a new process, he who introduces it will gain more if he has only to compete with home production destitute of this process, than if he has to compete with the improved product sent from abroad; and, once introduced, home competition will suffice to force the general adoption of the improvement. Thus, rivalry between the producers of different countries is not dependent on the direct exchange of their products. The manufacturers of England owe nothing to the kind of competition on which our theorisers place so much reliance, and, in manufacturing improvements we have no rival so formidable as Protectionist America.

Another assumption of our theorists is that if commodities are freely exchanged over all the world, every commodity will come to be produced permanently in the localities in which it can be produced to most advantage, and that thus commercial exchange will result in a net gain to all those engaged in it. Now this theory is based on the most profound ignorance of the working of competition—an ignorance which is not very surprising when it is considered that most of our economists are and have been professors in Universities.

If with mutual free trade there were in France and England equally developed cotton industries, according to this theory France ought neither to import cotton goods from England, nor England from France. Every mercantile man knows, on the contrary, that, in these circumstances, the agents of English manufacturers would be in every port in France, and the agents of French manufacturers in every port in England; and that, whenever, from

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any cause, there was an inflation of production in one country, the markets of the other would be flooded with its products. And while the action of competition in diffusing improvements is casual and incidental only, this disintegrating action is not only permanent, but is the most distinctive of the operations of competition. The increase of distributive agency to which this excess of energy necessarily gives rise enhances the cost of production all round, and as at the same time the intensity of competition forces apparent reductions of price, the normal effect of excessive competition is, as I have before said, the degradation of quality.

Mr. Glover in the passages I quoted apparently assumes that the prosperity of our shipping trade is due to the repeal of the navigation laws. This is, no doubt, an exaggeration due to his temporary enthusiasm for his subject. Mr. Glover, on reconsideration, would admit that in as far as it was due to commercial policy at all, it owed much more to the repeal of the corn laws than of the shipping laws. The repeal of the navigation laws might help to extend our trade generally. Its direct influence on our shipping trade would obviously be in the opposite direction, and this tendency could only be counteracted by its reducing freight so much as to expand our trade from this cause alone. Now, as we are evidently able to build ships as cheaply as any other country, I see no reason to suppose that without the repeal of the navigation laws building would not have been extended sufficiently to reduce freights to the lowest remunerative level. If foreign competition has done more than this, it has done evil; that it has done more, I do not say in all cases, is, I think, manifest from experience. Ever since the repeal of the navigation laws we have had reiterated complaints that shipping does not pay. Allowing for the universality of such complaints in mercantile circles at all times, and for the undoubted success of the more favoured section of our trade, there has, no doubt, been a substantial basis for these complaints in that tendency to excess of production which uniformly distinguishes competition, and with which, as I have shown, deterioration of quality is invariably associated.

ROBERT SCOTT MOFFAT.

* Industri.

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# THE COMMERCIAL CODE OF RUSSIA.

(*Continued.*)

## BOOK III. PART 1.

### CHAPTER II.—(*Continued.*)

### *On the Purchase and Sale of Merchant Vessels.*

811. (Supt. of 1876.) Persons having a right to carry the Russian flag and selling their vessels in the ports of foreign powers, must in all cases effect the sale with the knowledge and participation of the Russian Consuls in those ports.

812. The Consul must not give his consent to the sale (Art. 811) before (1) the production by the master of an authority or other legal document giving him a right to effect the sale, and if the purchaser be not a Russian subject, all the papers showing the nationality of the vessel, viz., deed of ownership, license to carry the Russian flag, and passport issued to the master on his sailing from Russia; (2) the verification of the stipulated price being the real [one] and such as in fact the vessel is worth.

Note.—The authority of the Consul on the sale of a Finnish vessel in a foreign port is limited to the simple inspection of the title of the vendor to sell the vessel.

813. In ports where there are no (Russian) Consuls vessels may be sold through the instrumentality of the local authorities, notaries, or brokers, according to circumstances, but on condition that proper measures be taken with regard to the repatriation of the crew on the basis of the rules laid down below in Art. 994, and that the vessel's documents are presented to the nearest Consul. *See* note to Art. 208.

814. Legations, in whose offices the sale of a sea-going vessel has been effected, will immediately send information concerning it to the Department of Exterior Trade, accompanied by the vessel's papers and also those showing the authority for the sale of the ship. *See* note to Art. 768 [ante].

815. The Department of Exterior Trade keeps the passports for the Customs such as cargo documents. All other documents are forwarded to the Department of Manufactures and Interior Trade for

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preservation, and, in case of need, for production in a suit. *See* note to Art. 768 [ante].

816. Should information reach a Consul that the sale of a Russian vessel has been effected without his sanction, or in a port where there is no (Russian) Consular Officer, he is in like manner bound to make a report of it to the Department of Exterior Trade. *See* note to Art. 768 [ante].

817. On the sale of a vessel without the sanction of a Consul, and on the non-presentation of the documents, when the sale has been effected in a place where there is no Consular Officer, the guilty [party] is liable to the infliction of a fine under Art 1,216 of the Penal Code (1866 edition).

## CHAPTER III.

### *On Partnership in the Construction, Purchase, and maintenance of vessels.*

818. Persons who have built a vessel at their joint expense, or have bought one, or received one in hereditary succession, are called its co-owners [*obshtchie khozyaeva*].

819. Persons who agree to build or buy, at their joint expense, a ship, or vessel, must draw up the contract in writing.

820. The contract concerning the construction or purchase of a ship or vessel at joint expense, must show:—(1) how much money each of the partners [*tovarishtchi*] gives towards the construction or purchase of the vessel; (2) how the profit and loss is to be divided during the period of co-ownership.

821. The contract (Art. 820) is written on stamped paper, and is completed by registration by a private broker in his book. *See* note to Art. 203 [ante].

Note (Supt. of 1876).—The contract mentioned in this Art. (821) is subject to stamp duty. (Tax Regns., Art. 2, App. Supt.)

822. If a ship or vessel is built or bought at the joint expense of several persons, the deed of ownership for it is entrusted to one of them with the common consent of the others.

823. The co-owners of a vessel are obliged to select by common consent one partner, who is entrusted with the management of and arrangements for the ship or vessel.

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824. The managing owner (*natchalnyi tovarishtch*) is obliged:—(1) To endeavour, in order that the vessel may not lie idle, to take care concerning the chartering of it; (2) to give the master of the ship or vessel instructions and orders with regard to disbursements, and the economy to be observed with respect to the ship or vessel; (3) to correspond with the master of the ship or vessel during a voyage; (4) to furnish him with letters of credit to enable him to obtain money in case of necessity, or of cash running short; (5) to keep an account with the master of the receipts and disbursements of the voyage; (6) to keep an account with the other co-owners of the profit and loss on the ship or vessel.

825. If one of the co-owners of a ship or vessel wishes to sell his share or retire, he cannot do so without the consent of the others.

826. When the co-owners of a ship or vessel do not consent to accept as a co-owner a person to whom any one of them intended to sell or transfer his share, they may buy this share themselves, and pay for it a sum reckoned according to the valuation of the ship or vessel.

827. The valuation in such case is made according to the age and condition of the vessel, its tackle and equipment, and not according to the caprice of one or other party; the money for the share must be paid and received in the course of a month from the day on which the sale or transfer of the share was notified to the co-owners.

828. In expenses incurred for repairs of a ship or vessel belonging to co-owners, all should participate. If the repairs of the vessel cost half or more than the building or purchase of it cost, and all the co-owners consent to such repairs except one who does not desire them to be executed, he may be altogether excluded from the partnership on giving him a fourth part of the sum which he originally gave towards the building or purchase of the ship or vessel.

829. The contract of partnership between co-owners of a ship or vessel is dissolved when the ship or vessel is sold by common consent, or broken up, or captured, or destroyed by any accident.

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## PART II.

## *On Contracts and Obligations Relating to Mercantile Navigation.*

### CHAPTER I.

### *On the Law of Navigation.*

830. (Supt. of 1876.) The right of doing business everywhere, on board sea-going vessels built in Russia, in carriage of goods and other cargoes, is granted to all classes of Russian subjects, and also to foreigners living in Russia, without taking out a trade certificate, but the owner of the ship or the master must not trade on his own account unless he has acquired a right to do so. An exception to this latter rule is laid down in the Customs Code (Art. 561 supt., 562 supt.)

Note.—The purchase of provisions and necessaries for the use of the ship is not considered as trading on his own account, nor is the sale of the excess of such necessaries, nor the purchase and sale of Russian ships.

831. The rules concerning the navigation of vessels of the Imperial St. Petersburg Yacht Club, are contained in the regulations of that club.

832. Coasting navigation, *i.e.*, the conveyance of goods from one Russian port to another, in one and the same sea, is confined to Russian subjects and vessels sailing under the Russian flag.

Note.—A voyage to a Russian port lying on another sea, for instance, from Black or White Sea ports to the Baltic and back, is not reckoned as coasting navigation.

833 (Supt. of 1876) is abolished.

### CHAPTER II.

### *On Ship's Papers.*

834-836 (Supt. of 1876) are altered by the rules given below in 839.

837. The deed of ownership, or a legally certified copy of it, and the licence should always be on board a sea-going vessel, while it remains in the possession of a Russian subject; the Custom House passport is renewed on each voyage.

838. The rules for the issue of deeds of ownership for a sea-going vessel are shown above (Art. 792-798), and the rules con-

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cerning the passports and *transires* [freedom to leave a port] of a ship, in the Customs Code.

839. The rules concerning the order of issue of licences for the Russian mercantile flag are appended to this [Art.] (App. I.-VI.)

839. (App. I., Art. 5, para. 3. Supt. of 1876.) Demands for the inscription of vessels in the marine lists are presented to a competent Custom House at the wish of the owners. (Tax Regns., Art. 2, App. Supt.) To these demands . . . are appended . . . (3) a verification of the licensing of the vessel (Commercial Code, Art. 792, 798), indicating its class (schooner, brigantine, bark, &c.), and a description of its dimensions and size in lasts. *See* note to Art. 792.

840 (Supt. of 1876) is altered by the rules shown in Art. 839.

841. (Supt. of 1876.) Licences are printed on paper or parchment. On the issue of these licences, the seal of the Custom House from which the licence was issued is affixed.

842. (Supt. of 1876.) Blank forms of licenses are prepared in the Department of Trade and Manufactures and sent to Custom Houses and port authorities to issue to ships.

843 (Supt. of 1876) is altered by the rules shown in Art. 842.

844. (Supt. of 1876.) The Custom House (officer) on presentation of a ship's deed of ownership and the license of the owner, after filling up the blanks, inscribes on the license, by affixing its [*i.e.*, the Custom House's] seal or stamp, the place and date of issue of the license, and also makes an endorsement of this on the deed of ownership, together with a demand for the proper payment for the stamped paper or for six roubles if on parchment.

845. (Supt. of 1876.) On the issue of licenses for vessels a demand is made on the owner of the ship, in addition to the payment for the license, of payment at the rate of thirty copecks per last, when the license is issued for ocean voyages [lit. great navigation], and at the rate of fifteen copecks per last, when the license is issued for coasting voyages [lit. little navigation]. This tax is collected, in ports where there is a naval authority, by this authority, and where there is none, by the Custom Houses.

Note.—The payments for *the license*, and also the *last* tax (tonnage

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due), collected by the Custom Houses or port authorities, is paid into the Treasury to be incorporated with the general State Revenues.

846-848 (Supt. of 1876) are altered by the rules stated in Art. 839.

849-851 (Supt. of 1876) are cancelled.

852. Firmans, guaranteeing the security of mercantile sea-going vessels in the waters of the Ottoman Porte, are obtained for Russian vessels on the request of the Minister of Finance from the Minister of Foreign Affairs who holds them in reserve, a payment being made on account to the Ministry of Finance. Such firmans are issued to ships, on receipt of the requisite amount by the Military Governor of Odessa and (*gradonachalniki*) governors of towns, and where there are none, by the Custom Houses.

Note (Supt. of 1876).—Generally speaking, all chiefs of Governments have the common title "governor;" the post of military governor is only preserved in the towns of Kronstadt and Nicolaieff, in the Caucasus and in Siberia. This note also relates to Arts. 2,313*, 2,319*, 2,750*, and 2,850*.

## CHAPTER III.

### *On the crews of Russian Merchant Vessels.*

853. (Supt. of 1876.) Russian masters and pilots (*a*) cannot be appointed to these positions or undertake the command or conduct of sea-going vessels except after passing an examination in the prescribed subjects [branches of knowledge] and obtaining the necessary certificate or license; the attestation of their conduct is left to the certificate [character] given by the owner of the vessel.

Note.—Rules for conducting the examinations for masters and pilots (*a*) are appended to this Art.

*See* however, notes to Art. 854.

854 (Supt. of 1876) is cancelled.

Note 1. (Supt. of 1876).—For the preparation of masters and pilots for mercantile sea-going vessels and of naval architects, courses of instruction for masters have been established in the towns of Archangel and Kemi, as well as a navigation course in the school at Libau. Pupils who have finished instruction in the Archangel and Kemi courses of instruction for masters, and also persons who have previously completed four sea voyages to the coasts of Norway and back, are permitted to offer themselves for

* These articles have no reference to Maritime matters.

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examination for the post of assistant pilot (*a*); and having served four years as assistant pilot (*a*), and presenting satisfactory certificates, are permitted to offer themselves for examination for the post of pilot (*a*). These rules are generally applied to all persons who in the said [indicated] courses pass the examination for the post of assistant pilot (*a*), but on condition that these persons continue to serve at sea during ten years from the day of issue to them of the certificate for this post. They are supervised by the Chief of the Government, who is bound to take away their unlimited passports at once and replace in their former class persons leaving the sea service before the appointed time.

Note 2. (Supt. of 1876).—The chiefs of the region or Government in places on the coast are permitted to form navigation classes, on the bases shown in the regulations concerning navigation classes appended to this Art. where the communes express a wish to establish such classes and make the necessary donations for their establishment.

Notes 3 and 4 (Supt. of 1867) are cancelled.

(*a*.) The word "Pilot" is a literal translation, it denotes, however, a person qualified to navigate a ship, and therefore includes the mate or navigating officer as well as coasting and harbour pilots. The context will show in which sense it is used.

855. (Supt. of 1876.) On board Russian vessels belonging exclusively to Russians it is permitted to have foreign sailors not exceeding one quarter [of the total number] except in cases in which the number of foreign sailors is defined by special trade regulations or treaties. The master must in all cases be a Russian. *See* Art. 839, App.; Art. 20, supt.

Note. (Supt. of 1881).—As an exception to the general rule in this (855) Art. is indicated the temporary rule laid down in Art. 20 of the Appendix to Art. 839 (Supt. of 1876).

839. (Supt. of 1876), App. 20. It is permitted, until further orders, to have foreigners for masters and pilots, as well as for sailors, without limitation of number, on board Russian vessels. For the purpose of increasing the means for the education of sailors in Russia, there is instituted, for the benefit of navigation classes, a State tax on owners of vessels, having on board their vessels more than three-fourths of the whole crew foreign sailors at the rate of twenty-five roubles per ann. for each foreign sailor in excess of this proportion. The said monies are paid into the proper Custom House, and where there is none into the harbour office [lit. port direction] before the vessel is allowed to leave the port, on the issue to the master of the (*sudovaya rol*) muster roll.

856. (Supt. of 1876.) Foreign vessels bought by Russians, or

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by foreigners living in Russia, are subject to the rule concerning crews indicated in Art. 855.

857. On sea-going merchant vessels, sworn masters, pilots, and lodesmen [coast, river, or harbour pilots] are to be taken in preference to others; they are sworn according to the regular form of oath appended to this Art.

For this Appendix, see at end of Code.

858. Russian masters and pilots, who have been examined and approved of, on undertaking to follow the sea service, are free from election to municipal [town] office, though by their position as burghers or merchants they should be subject to it. Such masters and pilots as are certificated as capable of taking charge of coasting decked-vessels, but intended for the transport of goods and not for fishing only, are also free from serving municipal offices.

Note. (Supt. of 1879).—Masters of trading societies of the Don Cossacks are freed from election to municipal functions, on condition, however, that this right be enjoyed only by those who have their own sea-going vessels, and are masters of them, and that their freedom from election is effected on the nomination of the (*oblast*) provincial administration of the Don Voisko* with the confirmation of the Nakazny† ataman.

859. (Supt. of 1876.) If Russian masters or pilots serve irreproachably in this position on board ships for twenty years, and during this time make at least six voyages to distant foreign ports, and, in addition to perfectly satisfactory certificates from their employers, present certificates concerning these voyages from Russian Consuls or from Russian Custom House authorities, they receive a gold or silver medal to wear round the neck.

860. (Supt. of 1876.) In the towns of Aleshki in Tauridus, and Nicopolis in Ekaterinoslav government, societies or corporations of free seamen are formed of the local burghers, peasants and labourers. The rules concerning the formation of these corporations and the rights allowed to persons belonging to these societies, are appended to this Art.‡ These regulations also apply to the

* Don Voisko, the district or clan of Voisko Cossacks.

† Nakazny ataman, the administrator of the clan holding office nominally under the hereditary chief, but appointed by the Emperor.

‡ For this Appendix, see end of Code.

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classes or corporations of free seamen established under the control of the local authority of the governments of Kherson, Ekaterinoslav, Tauridus, and Bessarabia, in other ports of the Azov and Black Seas. To the same authority, and on the bases of the regulations laid down in that appendix, it is permitted, in case the need for it be observed, to establish free seamen's societies in other towns, burghs, and villages near the Dniepr and the Sea of Azov.

Note 1. (Edition of 1857.)—Foreign sailors are permitted on their adoption of Russian nationality, to enter the New Russian and Bessarabian corporations of free seamen, with the grant, so long as they serve at sea, without however, the obligation of serving in the war fleet, of all the rights enjoyed by Russian free sailors.

Note 2. (Edition of 1857.)—The freedom from paying taxes and other liabilities granted by the 3rd Art. of the Appendix to this Art.* to free seamen, is extended to persons entering the Riga seaman's corporation. The local authority in permitting registration in a corporation and in the limitation of the number of sailors which should constitute it, is guided by the local need for this class of people, and in conformity with the 7th Art. of the Appendix,* sees that those entering the seamen's societies are actually employed in the sea service, or if not that they are excluded from the corporations.

Note 3 (Supt. of 1876) is cancelled.

861. With the view of increasing the number of trained [experienced] Russian seamen, and the formation of a special class of national sailors, it is also permitted to establish free seamen's societies in the Crown villages of New Russia, in the region lying along the Dniepr and Sea of Azov, on condition, however, that the inhabitants should not be brought into the said societies by whole villages, for not only are there in families persons unfit for service as sailors, but there are families in which there is not one man fit for this service. The regulations on which the formation of such societies is permitted in the Crown villages of New Russia are appended to this Art.† *See* note 3 to Art. 783.

Note (Supt. of 1876).—State peasants of various denominations, which were under the jurisdiction of the Ministry of State Domains, were placed under the control of the general governors and (*uyezd*) district administra-

* For this Appendix, see end of Code.

† [For Appendix, see end of Code.]



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tions on the basis of the regulations issued as a special appendix to the law on classes. This note also relates to Art. 860 (App. Art. 6), 861 (App. Art. 1, 2, and 8), 2407,* 2765* (note), 2814* (note), and 2816.*

861. (App. Art. 8.) All the other rules relative to the term of service in the Black Sea Fleet for the acquisition of a practical acquaintance with the duties of a free trained seaman, which are laid down above in the Appendix to Art. 860, for the societies of free seamen in the towns of Aleshki and Nicopolis, are extended to the free seaman's societies in the State villages. *See* note to Art. 861.

862.† In Kronstadt a society or corporation of free seamen has been founded according to the rules and instructions appended to this Art.

863. Town councils are bound to see that persons who have been allowed to enter a society of free seamen are actually engaged in the sea service, and do not cause damage or prejudice to the burghers who pay all liabilities. *See* note to Art. 28.

28. Note (Supt. of 1876).—Magistrates and (*sudebniya ratushi* pl.) town-hall courts in governments, administered according to the general constitution, are dissolved. It rests with the Ministry of the Interior, in those town settlements where the said institutions also carried on the town administration, to establish, for affairs of this nature, either town councils on a general basis, or a simplified communal administration conformably with Art. 133 of the Regulations for the Administration of Siberian Governments. Where the town regulations of 1870 have been introduced, the obligations imposed on town councils of anterior formation with reference to the supervision of the regularity of trading operations, and also the collection, for the use of the Treasury or (*zemstvo*) Provincial Assembly, of a tax for the right to trade, are fulfilled by the town administrations.

864. With the consent of the Minister of the Interior, Finance, or State Domains, as the case may be, corporations of free seamen may be established in other ports.

865. By the establishment of corporations of free sailors, other persons are in no way hindered from being sailors.

866. Free seamen belonging to societies established in towns, and generally in those localities where municipal [town] administrations exist, are criminally and civilly under the jurisdiction of

* [These Arts. have nothing to do with Maritime Law.]

† The corporation of free seamen in Kronstadt is dissolved. (Collection of Laws, 1883, No. 27, Art. 315.)

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the magistrates or (*ratushi*) town-hall courts; those belonging to societies established in villages are, in the same matters, under the jurisdiction of (*uyezdniye suda*) district courts.

867. Persons liberated from a corporation of free seamen are inscribed in burgher societies [communes] on the basis of the laws on classes.

868. Chiefs of free seamen's societies are permitted to send through the post, without payment of postage, correspondence relating to the affairs of their societies addressed to administrations [courts] and officials.

869. Careful [lit. punctual, correct] boatmen, who on the completion of a river voyage receive from the owners of the vessels discharges and characters, are permitted on presentation of them to the brokers to register themselves as sailors for trading merchant vessels.

870. The sailors registered in towns and ports are permitted to elect among themselves a chief *artelshtchik* [member of an association or community] and a few *starshins* [elders] according to their confidence and wish. Each elected artelshtchik or starshin, should he not be inscribed in a guild, or in the list of burghers of that town, or have no house in it, is obliged to deposit, by way of bail, with the town *starost* [bailiff] the third [of the sum that may in a year be acquired by seamanship] of a year's wages.

871. Every experienced boatman may apply to the chief artelshtchik, who, along with the starshins, presents him to a broker for inscription in the list of sailors.

872. The chief artelshtchik and starshins are obliged to take measures for the distribution of the sailors by *artels* [associations of workmen, &c.] and to see that in each artel the men are acquainted with their duties, faithful, and experienced. They, the starshins and artelshtchik, will be careful that all sailors, registered in that town or port, as well as arriving in it on boats and vessels, receive their wages properly, and at the proper time, and will look after and defend their rights on all occasions in accordance with the laws on mercantile navigation.

873. The Ministry of Marine will, as far as possible and for a definite time, on the demand of merchants of the first and second



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guilds grant leave for [service in] vessels built in Russia, to experienced, healthy, and well-conducted petty officers and sailors of the fleet with their own consent, and will also give leave to serve, at their own desire, to officers and pilots of the fleet.

Note 1.—The right granted by Arts. 873-876, and 882 to merchants of the first and second guilds, to have on board their vessels, by permission of the authorities, officers, pilots, and sailors of the fleet, is extended during peace to the members of the St. Petersburg Yacht Club, on condition that they, like the others, should be returned to their duties on the first demand of the marine department.

Note 2. (Supt. of 1876).—Conductors [a rank similar to that of a warrant officer in the English Navy] of the corps of pilots of the fleet, naval engineers, and mechanical engineers, who have leave to serve on board merchant vessels, are placed upon the half-pay of their rank. This note also relates to Art. 874.

874. Officers and pilots of the fleet detached from the naval department on this basis (Art. 873) are placed on half-pay with permission to retain the orderlies* allowed them, but the owners of vessels must provide petty officers and sailors with pay as if freely hired, and with food according to the naval regulations, not claiming from the treasury either pay or sustenance, and paying to the treasury for the maintenance of their uniform at the rate of sixty silver copecks per month for each man. *See* note to Art. 873.

875. On serving the years permitted on board merchant vessels, the men of the naval department are replaced by others, but owners of vessels have a right to demand their exchange before the appointed time or their continuance beyond it.

876. The time passed by these ranks on Russian merchant vessels is reckoned as active service.

877. Good certificates from owners of ships given to these ranks are held in esteem by the Ministry of Marine, and in cases of exceptional good conduct and zeal, to the advantage of the owner and national seamanship, influence suitable rewards.

878. Lower ranks who have left the service, are permitted to hire themselves without hindrance on ships and *rafts* † destined for

* [Servants from the ranks.]

† This must apply to riverine navigation or those rivers which run from Russia into other countries, such as Germany.

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abroad on the same terms as ordinary workmen [labourers] are hired; this is also permitted to men on unlimited furlough, but on condition that their absence should not be prolonged beyond two months, and that the Customs' authorities immediately inform the Inspecting Department of the Ministry of War of their discharge and return.

Note (Supt. of 1876).—The Inspecting Department of the Ministry of War and the chief administration of the General Staff are combined in one administration under the denomination of Chief Staff.

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## THE LOAD-LINE.

BY a letter, which we reproduce below, it appears that Mr. Samuel Plimsoll, late M.P. for Derby, is again amongst us, and is again taking an interest in British shipping. We are glad to find this is the case, as any discussion or legislation in the interests of the life of the sailor would be as incompatible without the voice of Mr. Plimsoll as would be the play of "Hamlet" without Hamlet. Mr. Plimsoll is anxious that his name should not be any longer associated with the representation of "Saturn and his rings," which now adorns the sides of ships whose privilege it is to wear the red ensign, and he wishes it to be understood that the credit and honour attending the invention and adoption of that device should hereafter rest on the person of Mr. C. M. Norwood, the Member of Parliament for Hull. We fear, however, that in spite of the facts of the case, and in spite of Mr. Plimsoll's wishes, the ornament referred to on British ships will always be spoken of as her "Plimsoll." British Mercantile Jack has got it into his head, and to expect him to call it by any other name is to expect an impossibility, and it is true that although Mr. Plimsoll did not agree to the proposal that the owner should place the mark anywhere his own sweet will might dictate in every case, it was that honourable gentleman, and no one else, who led the crusade which ended in the adoption of the "load-line disc." It was not what Mr. Plimsoll

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wanted, it has in many cases become a direct means of compelling seamen to go to sea in ships which if loaded down to it would be overladen, but it was nevertheless the direct outcome of the Plimsoll agitation, and will never, we fear, become dissociated from his name. But why should it be dissociated? It is in all probability about to become a reality, and not as it has been in many cases, a sham, a delusion, and a snare. When, as certainly will be the case, the mark shall denote the position of proper and safe immersion, Mr. Plimsoll will see nothing in it to object to, and therefore nothing to disown; and it is because it is made clear by Mr. Plimsoll's present letters that he may now be expected to give his aid towards the converting of a sham into a reality, that we congratulate the British seaman on Mr. Plimsoll's second advent.

The following is the letter we have referred to:—

"MR. PLIMSOLL ON 'THE PLIMSOLL MARK.'

"*To the Editor of 'The Echo.'*

"SIR,—In your issue of to-day I see that what is called the 'Plimsoll Mark' is spoken of as a foolish and delusive bit of legislation. I have always so regarded it, because instead of the load-line being fixed or supervised by competent authority, which I struggled for, the senior member for Hull succeeded in leaving the position on the ship's side to be left to the discretion of the shipowner, who might fix it where he liked, and alter it as often as he pleased—a proceeding which I have frequently stigmatised in public as being just as absurd as it would be to allow a draper to determine how many inches he would consider a yard, or a grocer how many ounces he would allow to go for a pound. I have since frequently urged the authorities to inspect the position of each load-line (a return of dimensions would do it), and where needful to alter it, and have submitted a plan by which this could be done with little trouble. It could easily be made a good load-line. A competent ship surveyor in Liverpool once showed the Board of Trade that eleven different sizes of disc varying half an inch in diameter would cover 10 per cent. of the carrying capacity of all ships, from a barge to the largest built. Mr. Charles MacIver, of the Cunard Line, said only two conditions could properly vary the

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loading of a ship; seasons he eliminated for obvious reasons. These were the nature of the cargo and the nature of the voyage. The disc is the only mark—a part of which seen will show how much is unseen. If the centre of the disc were the maximum load-line, then either half-way to the bottom of the disc from the centre would be right when one of these conditions was unfavourable, and the whole disc should be out of water when both are unfavourable. My efforts to secure that the load-line shall be fixed by authority were unsuccessful. I hoped much when at length Government promised to take the matter up themselves. In justice to Mr. Chamberlain, however, I must admit the enormous difficulty he has had to contend with, and thank him for the good he has done. It has, however, always appeared to me that his department already has power sufficient to ascertain the position of the load-line, and also power, or at least influence enough, to have its position altered where it is too high, each ship being dealt with on its own merits. In this view it is not so much legislation as efficient administration which is needed.

"Yours, &c., "SAMUEL PLIMSOLL."

"28, Park Lane, W., June 16."

In a subsequent letter to the same paper Mr. Plimsoll points out that the load-line disc is probably now placed in its proper position on the majority of British ships, and that the minority should be taken on their merits and position of their load-lines fixed by the present or some other Load-line Committee. Mr. Plimsoll suggests the appointment of a Committee to consider the manning question. That something will have to be done as regards manning is obvious even to the most superficial observer, and inquiry by a competent Committee is no doubt one of the most necessary and effective preliminary step in such a case.

The sitting of the Load-line Committee, which was held on the 10th June, 1884, was favoured by the appearance as a witness of the Wreck Commissioner, the substance of whose evidence was speedily communicated to the newspaper press, and is by this time therefore pretty well known throughout the country. This fact

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alone relieves us from the responsibility we should otherwise have felt bound to take upon ourselves of reproducing it *in extenso* in the *Nautical Magazine*. There are, however, one or two points in the Wreck Commissioner's evidence which we must put on record for the satisfaction of our readers. The first of these in order relates to the relations of the Wreck Commissioner and the Board of Trade. For reasons totally unexplained (and unexplainable as having no foundation), the Wreck Commissioner has been regarded by many shipowners as a superior officer of the Board of Trade. By those shipowners his judgments, proceedings, and reports have been regarded as mere confirmations and registrations of the views and wishes of the President and permanent Secretary of the Board. In our columns we have often been at pains to point out that the Wreck Commissioner is in no way a servant or representative of the Board of Trade; and we have shown, as instanced by the case of the *City of Limerick*, that so far from registering the views of the Board of Trade, he fears not to reject the evidence of the Board's staff and the views of the Board's Counsel, and to allow a ship, which the Board had deliberately detained, to proceed to sea. It is not for us to say that his decision was right or wrong; but we most distinctly say that the case furnished conclusive evidence, if evidence were needed, of the entire freedom and independence of the Wreck Commissioner from any Board of Trade control, or from any leaning towards the Board or their officials. The evidence now given by the Wreck Commissioner before Sir Edward Reed's Committee, affords another confirmation of the fact that he is not a representative of the Board of Trade in any way, and is in no way under the control of that Board; and as a matter of course, it follows, though it is not stated in the evidence, that the Board of Trade cannot in any way be held responsible for the judgments and opinions expressed in the Wreck Courts, and in the Courts of Survey, nor for any observations or reports of the Wreck Commissioner. Those of our readers who have advanced opinions to the contrary will no doubt be good enough to read the Wreck Commissioner's own evidence on the point, which is as follows:—"I am quite independent of the Board of Trade. I am appointed by the Lord Chancellor, and it was dis-

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tinctly intimated to me when I was appointed, that I was expected to hold so far as I could an even balance between the shipowners and the Board of Trade, and that I was in no way dependent upon the Board of Trade." Do not you receive some communications from the Board of Trade ?—"Only this communcation—that I am asked whether it is convenient or not for me to take the case, and I then state whether my engagements will allow me to do so. That is the only intimation I have beyond the mere formal statement that it is a stranding case, a boiler explosion, a sunk ship, or something of that kind. I know no more what is in the brief of the Board of Trade than a judge would know what is in the brief of the plaintiff's attorney."

As regards the load-line, the Wreck Commissioner gave it as his opinion that there should be three load-lines (1) "North Atlantic Winter;" (2) "Winter elsewhere;" (3) "Summer." In this his views coincide with the existing practice of the Board of Trade. He proposed that the load-lines in each case should be settled "by competent authority for all vessels." In this he agrees with Mr. Plimsoll, and probably with the opinions of the great majority of shipowners. The learned gentleman then proposed that each of the three lines should be marked in a different colour, one *red*, the other *white*, and the other *blue*. This seems to us to be more complicated than having a lozenge or diamond, of which the bottom point should represent North Atlantic winter, the middle winter elsewhere, and the top point summer. A diamond is better than a circle.

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## THE FUTURE OF PETROLEUM.

THE rapid development of the American oil trade, the fortunes made by "striking ile," and the mushroom cities which have sprung up near productive wells, and to be, perhaps, in a few years deserted and forsaken when the springs fail, are subjects with which most readers are by this time quite familiar. So much use has been made of the American oil deposits during the last twenty years that others

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have been almost forgotten. The American trade has been developed so largely that in the popular mind mineral oil is exclusively associated with Pennsylvania. The progress of the oil industry has certainly been marvellous. Public attention was only directed to the subject in 1853, and in the following year a company was formed; but it was not till 1858 that a well was sunk and oil actually pumped up in large quantities. By 1860 the oil-bearing region of North-western Pennsylvania was known to extend for 100 square miles, and in 1861 a further indication of the richness of the deposit was seen in the fact that a large well was struck in which the oil came to the surface and flowed over at the rate of 40,000 gallons a day. This, however, as we shall notice further on, has been surpassed in the Russian oil region. The total output of petroleum in Pennsylvania, which in 1859—the year of the first borings—was a little over 300,000 gallons, in twenty years rose to 600 millions of gallons. The rate of increase in the production of the United States is shown by the following figures :—

| Year. | Barrels. |
|---|---|
| 1859 ... ... ... | 80,000 |
| 1861 ... ... ... | 2,113,000 |
| 1870 ... ... ... | 6,500,000 |
| 1878 ... ... ... | 18,500,000 |
| 1882 ... ... ... | 37,000,000 |

The average content of the barrel is 40 gallons. The statistical abstract gives the quantities of petroleum imported into the United Kingdom each year from 1868. It will be sufficient for our purpose to state the figures for the first and last and the middle year of the period. These are as follows :—

| Year. | Gallons. | Declared Value. |
|---|---|---|
| 1868 ... | 4,824,268 ... | £298,856 |
| 1875 ... | 19,440,939 ... | £775,242 |
| 1882 ... | 59,695,982 ... | £1,721,019 |

These quantities and values include both refined and unrefined oil, but the latter is only a small portion of the whole. In the same period the average price of refined oil for each year was in 1868, 1s. 5½d. per gallon, and in 1869, 1s. 8d., but since that time

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it has declined to 7½d. in 1879, and 8d. in 1881. These figures give some idea of the rapid growth and present magnitude of the petroleum trade.

The extraordinary development of American oil-mining has no doubt been largely due to the great energy and ingenuity of those into whose hands it has fallen. Facilities for transport have been provided almost as soon as they were demanded, and means of refining the oil were invented and applied so successfully that whereas it at first made its way only where cheapness was the chief quality desired, it has at present almost superseded even the best vegetable oils employed for lighting purposes. Although mineral oil has only become such an important article of commerce during the present century, it has often excited the interest of the traveller, and the mysterious flames which have hovered over the districts where it has oozed up from the ground have aroused the superstition of the ignorant, and the curiosity of the learned. Plutarch tells us how it was noticed by the soldiers of Alexander near the River Oxus, where, as a hole was being dug to set up the king's tent, a vein of oil was struck which scarcely differed from "natural oil," which was the more wondered at seeing that there were no olives in the country. Traveller after traveller has described the flaring of the petroleum gas on the shores of the Caspian. By way of showing that the oil deposits of that district are no new and temporary affair, Mr. Charles Marvin, to whom the British public is indebted for so much information upon Russia and Russian affairs, has in a recent pamphlet collected notices of travellers on the subject from the visit of Mr. Jonas Hanway, merchant, in 1754, to those of newspaper correspondents during the last few years. In Hanway's time Baku was still a sacred place for the fire worshippers, and he thus describes their sanctuary:—

"There are several ancient temples built with stone supposed to have been all dedicated to fire. Among others is a little temple at which the Indians now worship. There are generally 40 or 50 of these poor devotees, who come on a pilgrimage from their own country. A little way from the temple is a low cleft of a rock, in which there is a horizontal gap two feet from the ground, nearly

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six long and about three broad, out of which issues a constant flame, in colour and gentleness not unlike a lamp that burns with spirits, only more pure. When the wind blows, it rises sometimes eight feet high, but much lower in still weather. They do not perceive that the flame makes any impression on the rock. This also the Indians worship, and say it cannot be resisted, but, if extinguished, will rise in another place."

In America, besides the Pennsylvanian oil deposits there are considerable quantities raised in Canada, chiefly, however, for home consumption. The rock oil of Burmah, extracted on the banks of the Irrawaddy and exported from Rangoon, has long been an article of commerce; indeed, Rangoon oil and Burmese oil are names by which petroleum is described in Acts of Parliament. The commercial importance of that district is, however, insignificant when compared with the American oil fields. There is no doubt that now that public attention is so much drawn to the subject fresh oil regions will be discovered, and the stores of petroleum laid up in the earth's crust may be of as much importance in the future as the deposits of coal.

Only three years ago attention was called to one of these sources of future wealth by the American Consul at Maracaibo in Venezuela. Frequent fires observed near the bar at the entrance of Lake Maracaibo are no doubt caused by the ignition of volumes of petroleum gas which is called by the natives "El Inferno." This is no doubt yet another oil deposit waiting for some one enterprising enough to extract its riches.

The largest recent development of petroleum production is, however, that at Baku, on the shores of the Caspian. A large amount of detailed information on the subject has recently been given, accompanied by admirable illustrations, in a series of articles from the pen of Mr. Charles Marvin, which have appeared in *Engineering*, and are now being published in a separate volume. To them we have been indebted for some of the information which follows, and to that work we would refer any one who would desire to be thoroughly acquainted with the question of Russian petroleum production.

When, in the beginning of the present century, Baku became

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absorbed into the Russian empire, the petroleum trade was made a monopoly, and farmed out to a family who at present do probably a better business in oil refining at Baku than when they had the whole of the trade in their hands. It was this arrangement which kept Russian petroleum for so many years in the background. The quantity extracted varied between 2,000 and 3,500 tons a year till about 1859, when the first refinery was established. The increase, however, was even then insignificant compared with the progress made in America, and in 1872, the last year of the monopoly, the production had only reached 24,000 tons. From 1872 to 1877, although the monopoly was abolished, there was still a Government excise duty upon the petroleum, and during this period the out-put of crude oil increased from 64,000 to 242,000 tons. In 1877 the duty was abolished, and at once the trade sprang up in 1878 to 320,000 tons, and since that has gradually increased, till in 1883 the produce was 800,000 tons, and it appears likely to increase in the same ratio for some time. Indeed, the only practical limitation of the produce of the wells appears to be the limited demand consequent upon the imperfect means of transport; better facilities, however, are being gradually provided, and it appears difficult to forecast the future of Baku petroleum. Crude oil, it is said, is just now selling at Baku at 3½d. per ton, and refined kerosine at 1d. per gallon. The turn out of refined petroleum which in 1878 was 97,000 tons, in 1883 was 206,000 tons.

The petroleum deposits of the region, of which Baku is the centre, extend along the northern slope of the Caucasus mountains from the peninsula which separates the Black Sea from the Sea of Azof, on the west, to the peninsula of Apsheron jutting into the Caspian. A submerged ridge, being in fact a continuation of the range, crosses the Caspian, and the oil deposits, which are continuous beneath the sea, and in places discharge under water oil which bubbles to the top and spreads on the surface in a film, reappear on an island, and again on the eastern shore of the sea, extending thence for some distance further east. The length of the range from sea to sea is over seven hundred miles. The western portion, that is the district nearest to the Black Sea, is not very productive

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and the nature of the country causes transport to be very difficult; and thus, although wells have here been in existence for some few years, but little progress has been made. The wells in this part are said to be exclusively in the hands of a French company, who convey the oil by a pipe line to a bay on the Black Sea, where they have a refinery. On the other extremity of the region on the eastern side of the Caspian, is the Island of Tchelelsen, which, it is said, is completely saturated with mineral oil; and about 100 miles inland to the east of the sea, there is the "Naphtha Hill," which is said to consist of a vast mass of solid petroleum deposit. There is a short railway connecting this place with the Transcaspian railway system, and from one well sufficient oil is obtained to supply the locomotives of the line, and also to furnish fuel for the government stations. The principal source of supply which has been utilized up to the present, is, however, the peninsula upon which Baku is situated. On the Surakin plateau, where are some of the important oil springs of the present day, was the celebrated sacred fire of the ancient Persians.

The small oil district which is actually worked at present is in the plateaux which form the middle part of the Apsheron peninsula and are at a height of over 170 feet above the level of the Caspian, and in consequence of this the oil can find its way through pipe lines by its own weight to the refineries and wharves. There is, as we have said, a group of wells at the ancient site of Surakhain, but the greater part are at another plateau called Balalshani. The whole area taken up at present is only about two square miles. In this place oil is seen exuding from the surface; many of the pits are but 100 feet deep and give a copious supply, but some are as much as 800 feet deep. It would appear that the strata which contain the oil are not arranged in layers with horizontal fissures as is usually the case in the Pennsylvania oil region where a new well, bored by a neighbouring speculator, may tap the supply of an older one at a lower point, and thus render a previously valuable property useless. At Apsheron, however, the oil would seem to be contained in isolated cavities, for it is sometimes the case that there are two wells side by side of which the shallower will have a better supply than the deeper. It thus does not appear necessary

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to extract the oil from new wells in order to make sure of not losing it, but the practice is to close them up and to draw oil as it is wanted. The oil is described as being in such abundance that fountains are frequently found as the result of new borings. They are, however, not desired, because if they burst out too quickly to be controlled, they do damage not only to the plant belonging to their owner, but also to adjoining works, and the man who after American precedent might think himself the lucky possessor of a fortune in oil, would practically in Baku obtain oil faster than he could dispose of it, and perhaps be ruined by having to pay for damage to his neighbours' property. Mr. Marvin tells us that "in 1883 there were two great fountains at Balakhain"—one ruined the owner, the other added thousands to the riches of its possessor. The latter belonged to Nobel Brothers. Of the 30,000,000 gallons it spouted to the surface only 1,000,000 gallons were lost, the remainder being caught and reservoired, and before the season was over converted into kerosine. This was entirely due to their extended means and vast organisation. In the opposite case the well was situated on a small piece of ground, and the poor Armenian company who owned it possessed no refineries, reservoirs, or any ground near for storing oil. The consequence was that in the end the price they got for such oil as was caught (in some instances only a few farthings a ton) was swallowed up in the claims for compensation, and in the end they became bankrupt, and the task of plugging up the well had to be taken in hand by the Government. One fountain in 1883, it is said, spouted sand 300 to 400 feet high, followed by a tremendous blast of gas, and afterwards the oil fountain rose to a height of 200 feet; but this was surpassed a few days later by another fountain, from which oil spouted to a height of 300 feet. From these facts it will be understood that after striking oil at Baku it is of the greatest importance to get the well speedily capped in such a way as to stand pressure and regulate the discharge. The oil is now conveyed in pipe lines from the wells to the coast, but formerly it was drawn along the roads in vehicles, thus described by a traveller in 1875:—"All day long petroleum rolls into Baku in carts of the most curious pattern imaginable. Each one is just big enough to hold one barrel

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of petroleum, and lifted so high on wheels 7 feet in diameter that another tub can be slung beneath the axle, the whole thing being painted with all the colours of the rainbow, and creaking loudly as it is drawn by a diminutive horse, the back of which is hardly up to a level with the axle. Yet the *exploiteurs* say that already they pay collectively not much less than £100,000 a year for the cartage of oil in carriages of this sort.

Nobel Brothers were the first to lay down a pipe line at a cost of £10,000, which they recovered in the course of the first year. The large development of Russian petroleum is indeed intimately associated with them, and the history of their connection with the Caspian oil region for the last few years is the history of its practical utilisation. An article in *Money*, 21st November, 1883, gives the following statistics of the export of refined kerosine from Baku to Russia, which show the progress of this firm :—

| Year. | Private Firms. galls. | Nobel Brothers. galls. |
|---|---|---|
| 1878 ... | 28,000,000 ... | 1,000,000 |
| 1879 ... | 31,500,000 ... | 1,850,000 |
| 1880 ... | 38,000,000 ... | 6,000,000 |
| 1881 ... | 46,500,000 ... | 15,500,000 |
| 1882 ... | 40,500,000 ... | 20,500,000 |
| 1883 ... | 30,500,000 ... | 32,500,000 |

There are three brothers, one of whom, Alfred, is known as the inventor of dynamite, and as being the head of the firm which manufactures it largely in Scotland. They have most extensive works at Baku, near the harbour, for the refining of petroleum. These are fully described, and are made the subject of a number of admirable illustrations, in the work to which we have referred. It would, however, appear to be chiefly owing to their admirable transport arrangements that Nobel Brothers have succeeded in bringing about the general use of Caspian petroleum throughout Russia, and of introducing it into Germany and Austria. American petroleum is, as everyone knows, exported in barrels which are generally made of wood. Wood is plentiful in America, machinery for barrel manufacture is also readily

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obtained and used. The case is, however, altogether different at Baku; there, timber was scarce, and the barrelling of the oil, for some time, was the largest item in its cost. Further, the means of transport was by the Caspian and Volga, and then to some extent by further inland navigation. Obviously, bulk carriage would be the best system financially. The Caspian being like most inland seas having mountain ranges near them, subject to sudden storms, care had to be taken in the design of steamers to carry oil in bulk, that they were so far sub-divided that movements of the oil could not materially affect their stability. This has been done, and there are now about fifty "cistern steamers" on the Caspian. One of these vessels is thus described by Mr. Marvin:—"The dimensions of the *Spinoza* will give some idea of the class of steamer composing the fleet. The vessel is steel built, 245 ft. long, 27¾ ft. beam, and when laden with kerosine has a draught of 11 ft. The engines are of 120 nominal horse-power, steaming at 10 knots. They burn petroleum fuel, the bunkers containing a supply calculated to last six days, *i.e.*, sufficient for the journey from Baku to the mouth of the Volga and back. The cistern-hold accommodates 750 tons of kerosine each trip. These steamers were built in Sweden, and taken through to the Caspian by the Neva and Volga and the canals connecting the two rivers.

At the mouth of the Volga it is necessary to transfer the petroleum to vessels of lighter draught, as steamers fit for the Caspian trade cannot, when laden, go far up the river. It has hence been necessary to construct a flotilla of barges. Some of these vessels are of iron, and carry the petroleum in bulk in the hold, others are of wood being fitted with large iron tanks. All the steamers on the Caspian as well as those on the Volga, burn nothing but oil fuel. This is the case also with vessels engaged in other trades, and it is stated that over 800 steamers on the Caspian and Volga are wholly dependent upon petroleum. We have heard one who was familiar with the old state of things describe the tediousness of the old arrangements for taking in supplies of fuel in Russian inland navigation. Large piles of wood were stored near the river, and men and women were employed at each station as



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porters, who carried the blocks of wood out and split to prescribed sizes, from the wharf to the deck of the steamer. Now a hose is put on board, and connected in succession with each oil tank or bunker, and the whole business is quietly got through in a few minutes. Some of the barges which convey the oil and liquid fuel in bulk are made in sections, which take to pieces in order to get through locks. Most of it, however, is only carried as far as the railway station of Tsaritzin, from whence it is distributed inland by train. In the inland transport the same principle is carried out, barrels are still dispensed with, and tank carriages upon wheels are formed into special oil trains. Nobel Brothers have had to provide this plant for themselves, and in the summer they transport oil to the large centres, such as St. Petersburg and Moscow, where it is stored in tank reservoirs. In the winter, when the navigation of the Volga is closed and when also the northern part of the Caspian is frozen, the oil trains are employed in distributing oil throughout the country. The retail dealers have their own barrels, which are filled from the tank trucks, Through this great trade organization, and arrangements which other firms have made of a similar character, Russia is now rendered independent of the American oil. Some of the latter of the best quality is still used in St. Petersburg, but scarcely anywhere else. Of late Russian oil has found its way overland into Germany and Austria, but the chief interest of the subject, as far as England is concerned, is the question of its southern transport by means of the Black Sea to the Mediterranean and the East.

Before going into this part of the question, it may be as well for us to say something as to the difference between the various petroleum products, in order that in speaking of the proportions of each obtained in the different kinds of crude petroleum, we may use the ordinary names. Petroleum consists for the most part, of a mixture of various chemical compounds of hydrogen and carbon. The number of combinations of these two elements is very great, and in many respects they differ considerably, but they are all combustible. Some are gaseous, some are bright liquids of the nature of spirit, which evaporate freely, some are heavier liquids to which the term oil is specially applicable, and some are

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solid. It was at one time the general opinion that they were all produced from animal or vegetable remains, but at present scientific men are by no means agreed as to the origin of petroleum. In the early period of the American oil mining the only question much debated was whether it was of vegetable or animal origin, or both, but of late the theory has been started that it is not due to the storage under the surface of organic remains of any kind, but that it has originated from chemical combinations of carbon and hydrogen in the interior of the earth. Water, it is said, may have found its way through fissures to parts of the earth's crust where high temperatures prevail, and, having become decomposed, its oxygen would be taken up by the metals, while its hydrogen would combine with carbon, which it is said probably exists in large masses in the interior in combination with metals. This view of the subject has no doubt been taken up in consequence of petroleum having been found in such large masses as almost to preclude the idea of its having originated in animal or vegetable deposits. If it be true, there is a great probability that it exists in still larger quantities than any which have yet been observed. Professor D. Mendelaieff, who, in 1877, published a work in Russian on the petroleum industry of Pennsylvania and the Caucasus, a lengthy extract from which appeared in *La Revue Scientifique* in the same year, states as an important argument for the inorganic origin of petroleum, the fact that no traces of organic remains are found in the *debris* thrown up or drawn from petroleum wells. In the course of a personal investigation of the oil regions of Russia and of America, he examined portions of it under the microscope, and never found any traces of organic remains. He also calls attention to the fact that while Caucasian petroleum is in strata of the tertiary period, that of Pennsylvania in is much older formations, and Canadian petroleum is contained in still more ancient strata, and if its origin be organic it can only be accounted for by the existence of large quantities of animal and vegetable remains in strata of an epoch in connection with which traces of them have not yet been found. Probably the question of the origin of mineral oil will be a debateable one for some time to come.

We have said that all the hydro-carbon compounds which go to



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make up mineral oil are combustible; the lighter ones are not only highly inflammable, but they are specially dangerous because at ordinary temperatures they give off gaseous hydro-carbons, which, when mixed with air in certain proportions are explosive. The same thing, as is well known, occurs with the gas given off from some kinds of coal.

The special liability of crude petroleum to take fire is due likewise to the presence in it of these volatile liquids. Hence it is mostly the practice to distil it at no great distance from the sources of supply. The crude oil being put in the still is first subject to a gentle heat, which has the effect of driving off from it in the form of gas its volatile parts, and when condensed they form what is commercially known as petroleum spirit, which again is sometimes separated into two or three products, known as gasoline and naphtha of different grades of inflammability. The remaining contents of the still are then subjected to a greater heat, the product of this second distillation being the petroleum oil of commerce, the name kerosine being applied usually to the better qualities of it. The distillation is continued further at a still higher temperature, giving oil which is not used for lighting purposes but only as a lubricant. The "residuum," as the remainder is called, is applied to various purposes in the arts. Mr. Edmund Dowling, of the firm of Pinchin, Johnson, & Co., of London, an eminent authority upon the whole subject, thus described in evidence before a Committee of the House of Lords last year, the ordinary commercial oils obtained from American crude petroleum. The same classification applies to all mineral oil products, but the percentages are different, and more especially is this the case in Russian petroleum.

"The base of the article that we deal with," said Mr. Dowling, "is a dark coloured article something like thin porter. That is crude petroleum, having a specific gravity of about 800, and having a rather low flashing point, from the fact that it contains spirit. This, upon being put into stills, can be cracked up into 30 or 40, or any number of different products; but the only commercial products are these: the first 15 per cent. taken off comprises petroleum spirit, and in my opinion when this 15 per cent. is eliminated, practically the whole of the danger is extracted from this crude

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petroleum. When we have taken 15 per cent. of the bulk away, in the shape of spirit, the next process is to get about 65 per cent. of the middle product, which is the oil of commerce or safe petroleum. Then we get 10 per cent. of heavy lubricating oil, which is used for machinery purposes, the remaining 10 per cent. being waste residuum, &c., which can be worked up as other products. For the 15 per cent. of spirit there was originally no sale, so that there was a great tendency to leave much spirit in the oil, but a very large number of uses have been recently opened up for petroleum spirit, notably the manufacture of Pintsch's gas for the Underground Railway, it is also used very largely in the manufacture of linoleum, and also as a solvent for india-rubber, and in the manufacture of varnish."

It is only petroleum spirit which has hitherto been the subject of legislation, premises where it is kept for sale must be licensed and open to inspection if the amount exceeds three gallons, not more than three gallons may be kept in any private house, and premises where it is stored are subject to regulations by local authorities. Its ordinary use for purposes of lighting is only in a sponge lamp which is useful for some purposes, from the fact that it can be easily carried about, but the light given by it is much inferior to that given by petroleum oil. Formerly it was much cheaper than the latter article, but owing partly to its recent use for other purposes, partly also perhaps to the legislative restrictions as to its storage and sale, it is now as dear in this country as the more useful and safer petroleum oil. In America, however, the case is otherwise, there petroleum spirit is very much cheaper than oil, and we have even heard of its being occasionally poured back into the wells in order to adulterate the crude oil, there being a certain demand for the latter for export. In Russia the petroleum spirit is usually allowed to run into the sea, being considered not to be worth the expense of carriage. Probably in time this, like all the other constituents of mineral oil, will be put to profitable use.

It will appear from what we have said that the real difference between the oil and spirit is one of degree as regards inflammability, practically the line is drawn between the two by the test prescribed by the Petroleum Acts. The details of the test are prescribed by

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the Act. A specially constructed copper vessel contains the oil which is closed up in it by means of a sliding lid, and is then carefully brought to a certain temperature when the lid is withdrawn, and the flame of a small lamp passed over the aperture. If the vapour from the oil flashes at a temperature below that prescribed, which is 73° Fahr., it is considered to be "low test oil" or as it is usually called "spirit;" if at a higher temperature it is called "high test oil." The whole of the details of making the test are carefully prescribed, as are also the sizes of the vessel, the quantity of oil put in it, the size of the flame passed over it, &c. These details are due to Professor Abel, and his method has been adopted by some foreign governments. It must not be understood that high test petroleum may take fire at 73°, but merely that in a closed vessel and under certain prescribed conditions it will flash at 73°. The temperature at which it will flash in the open air is not less than 100°, and it will not ignite under 110°.

A Bill was brought into Parliament last session to regulate the storage and carriage of all petroleum products, and was referred to a Select Committee of the House of Lords. It prescribed the registration of all premises where petroleum was kept for purposes of sale, whether it were of high or low test, and that it should be kept in such a place or manner that it could not escape so as to reach any other depôt or any dwelling-house or place of assembly, or any harbour, river, canal, or dock, these places being included under the term "protected work." The quantity to be kept within any dwelling-house was limited to fifty gallons, and depôts detached from dwelling-houses were to be allowed to store quantities varying from 100 to 750 gallons, according to the distance between them and other depôts or protected works. If the depôt was at a distance of 100 yards or upwards from any other depôt and from any protected work the quantity stored in it was to be unlimited. The Bill also contained provisions for regulating the carriage by road, rail, and sea, and the hawking of petroleum. It had been drawn up to some extent on the lines of the Explosives Acts, and it was soon seen by the trade that it would introduce quite a new order of things under which, with existing plant and under other existing conditions, it would be quite impossible to carry on the business.

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Putting on one side the recent Explosives Act, which, of course, is due to special circumstances calling for specially stringent measures, the former Acts were of such a character as to considerably hamper trade, but it has always been felt that the danger was so great that persons concerned were quite willing to submit to restrictions in order to minimize the risk of accident. Further, any regulations as to explosives which should even restrict their legitimate use would not inflict very great hardship upon large numbers of persons. With petroleum, however, the case is altogether different, it is the light of the poor, and is retailed extensively in small quantities, so that any regulations involving expense would be felt in the shape of increased prices by large numbers of the community. The number even of persons interested as traders in mineral oils is very large; it was put down by one important witness at 40,000, and the same gentleman stated that out of that number there were not 40 whose premises would comply with the conditions stated in the Bill, and not 400 who could by any reasonable outlay comply with its conditions. It can hardly be wondered at that the dealers in petroleum combined to resist legislation, which to most of them meant a total revolution in their business arrangements, especially when the dangers to be provided against were believed by them to be to a large extent imaginary. The Committee of the House of Lords came to the conclusion that it was inexpedient to proceed further with the Bill, and recommended the Home Office to frame a new Bill to meet the views of the witnesses and provide for the safety of the public. Since that time till the present date members of the Petroleum Association have had frequent communications with Colonel Majendie, the Government inspector of explosives. Their secretary has accompanied him in a tour of inspection of the principal petroleum stores in the United Kingdom, and also in Germany, and it is to be hoped that the result will be a workable measure interfering as little as possible with existing arrangements of trade, but at the same time making reasonable provision for the safety of persons who have to work or reside in or near petroleum stores. It is only just to the dealers in petroleum and the organised

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Petroleum Association to say that they have not taken up an attitude of opposition to all legislation whatever, they do agree to legal provision for such construction of petroleum depôts that the oil could not possibly flow out of them, and they are quite willing to have a clear space of ground round stores where very large quantities are kept. The chief question is one of quantities and distances, and it cannot, we think, be very difficult to solve it. It is to be hoped in the interest of the public that legislation such as is reasonably sufficient to avert danger will be speedily completed, and in the interest of the petroleum trade, it is desirable that what is done should be done now, and not in the heat of a panic which might some day be brought about by a great disaster.

Returning now to the consideration of the prospects of the new oil regions in south-eastern Europe, it is to be remarked in the first place that the Baku crude oil gives only 27 per cent. of refined high test oil as compared with the 70 to 75 per cent. obtained in Pennsylvania. Low test oils account for 4 per cent., lubricating for 44 per cent., and residuum or liquid fuel amounts to 14 per cent., 10 per cent. being lost in refining, and 1 per cent. being put down as vaseline, a solid hydro-carbon. It will thus be seen than Baku petroleum produces an exceptionally large percentage of lubricating oil and of liquid fuel. The latter is, as we have stated, used largely in Russian inland navigation. Railway communication is now opened between Baku and Batoum on the Black Sea, and the question arises as to what will be the effect of the new fuel upon steam navigation and trade generally in the East. The railway from the Caspian to the Black Sea was opened last year, petroleum is carried on it both in barrels and in tank cars, and the trade of Batoum has so much increased in consequence that it will be necessary to enlarge the port accommodation. There is evidently a great future for Russian mineral oil, and English shipping will no doubt come in for a large share of the trade. Already, consignments of Black Sea oil have been received in this country, but as yet there has been little demand for it, and it is hardly likely to do more in England than keep down the price of the American article. The quality of Pennsylvania petroleum was recently the subject of

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much complaint, and the effect has been considerable improvement, and quality being the same, it costing no more for freights from America than from the Black Sea, Russia will probably find better markets nearer home than in England. It should also in this connection be remembered that Scotch paraffin oil, which is distilled from shale, still holds its own, and is for some purposes preferred to petroleum. We are not able to give any figures as to the production of this article, but it is said to be sufficient to make Scotland independent of foreign supplies. A considerable quantity goes to Ireland and some comes to London. It may also be mentioned that the oil burnt in the English lighthouses is Scotch paraffin.

One of the most notable effects, to our mind, of the development of the Caspian oil mining is the use of oil for fuel in steamers, and the all-important question is, whether liquid fuel can be exported at such a price as to compete with coal in the Mediterranean and the East. If this be done, the effects upon trade will be almost incalculable. It is said that one ton of oil used in the crudest kind of furnace will go as far as two of coal; and in good arrangements, such as one recently patented by Mr. Robert Walker, it is claimed that one ton of oil generates as much heat as three tons of coal. If such be the case the profitable area of the employment of steamers will again be largely extended; and for the Eastern trade there will be the additional advantage of the nearness of the source of supply. The system in use in the Volga steamers is that oil and steam are together injected into the furnace, the force of the steam causing the oil to form a spray. The use of liquid fuel was made the subject of a series of experiments by the Admiralty as long ago as 1868, and the result is described in two papers by Admiral Schoyn, in the Transactions of the Institution of Naval Architects for 1868 and 1869. The method was similar to that in use on the Volga, and the experiments gave a good result, but the expense of the oil fuel proved to be an insuperable difficulty. Since that the price of American oil has much decreased; and if a low priced liquid fuel can be obtained from Russia it will certainly find a good market in the Mediterranean. It may be stated that crude oil as well as residuum is used as fuel for steamers.

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In the course of what we have said as to the connection of Nobel Brothers with the development of Baku petroleum, we have remarked upon their system of bulk carriage, which has certain advantages in Russia. The American trade, on the contrary, has always been in barrelled oil. Wood is there pretty cheap, and as the oil is refined near the wells, when it is once put in the barrel it remains there until it reaches the retailer. Messrs. Nobel's vessels are not, however, the first built for the carriage of petroleum in bulk. In 1870 we saw a steamer on the slip at Jarrow, building for the purpose of carrying oil in bulk for Belgian owners. She was named the *Nederland* and was of dimensions, length, 329·2; breadth, 38·6; draught, 30·8; gross tonnage, 2,838. Below the 'tween-decks in each hold there was an inner iron skin attached to the reverse bars and to the lower angle iron of the beams. Thus each hold formed a tank. The frames were of extra size, in fact the framing up to the 'tween-decks was similar to the web frames now so frequently used in vessels where the hold beams are omitted, but the *Nederland's* web frames were spaced much more closely. The beams, also, were formed of deep plates. The space between the oil tanks and the outer skin was intended for water ballast and had large capacity in that respect. The *Nederland* appears in the *Bureau Veritas* for this year as owned by the Société Anonyme de Navigation Belge-Americaine.

The American oil trade is mostly carried on by wooden sailing ships of low class, vessels in fact which would not usually get grain cargoes, though occasionally new colonial built vessels carry oil. On looking over the wreck list for 1881 to 1883, we notice that four vessels appear in it as lost which had oil cargoes. Two of these were *missing*, one was abandoned after being disabled and leaky, and as the crew were leaving her, it was discovered that some oil stowed in the poop had taken fire; the other, which was bound to Calcutta from New York, was disabled in a hurricane and abandoned. In the same period, 22 steamers and 27 sailing vessels, coal laden, were reported as *missing*. It must not, however, be forgotten that a deplorable accident, resulting in the loss of several lives, occurred a few years ago on board a coasting steamer, owing to the carriage of petroleum on deck.

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## GREENWICH ROYAL OBSERVATORY.

THE annual visitation of the Royal Observatory was duly held on Saturday, June 7th, and the Report of the Astronomer Royal to the Board of Visitors reviews the work of the Observatory during the twelve months which terminated on the 20th May.

The part of the Report which most concerns our readers is that relating to the *Magnetic Elements;* these were determined to be as follows:—

| | | |
|---|---|---|
| Approximate mean Westerly Declination... | ... | ... 18° 25′ |
| Mean Horizontal Force | ... | ... { 3·926 (in English units). 1·810 (in metric units). |
| Mean Dip | ... | ... { 67° 31′ 10″ (by 9-inch needles). 67° 31′ 36″ (by 6-inch needles). 67° 31′ 59″ (by 3-inch needles). |

*Deal Time-ball.*—There were 16 cases of failure in the dropping of this time-ball owing to interruption in the telegraphic connections; on nine days the violence of the wind made it imprudent to raise the ball.

*Meteorological Data.*—The mean temperature of the year 1883 was 49·3°, being 0·4° lower than the average. The highest air temperature was 85·1° on August 21st, and the lowest 20·6° on March 24th. The mean daily motion of the air during that year was 291 miles, which is 12 miles greater than the average. The number of hours of bright sunshine was 1,241, being about 30 hours above the average of the six preceding years. The rainfall was 21·9 inches, which is about 3 inches below the average. No definite connection was observed between magnetical or electrical disturbances and the phenomena of the remarkable sunsets of the past winter.

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# CORRESPONDENCE.

## BRITISH SEAMEN.

*To the Editor of the "Nautical Magazine."*

Sir,—Having seen in the May No. of the *Nautical Magazine*, a letter running down English seamen to the lowest, and written by a foreigner—for "Cosmopolite" ain't an English name—I cannot let such a base slander on the whole of us *pass*, without asking you to spare me a page in your next *Nautical Magazine*, to give my experience—which is a little longer than the skipper with the name that would paul a postman. I have been 50 years at sea, and am now just returned; for the last 22 years I have been boatswain in one employ, constantly making Australian and Indian voyages, and can faithfully state that I have not noticed that our English seamen are inferior to what they were years ago; and as for that yarn about one good man out of 50, and the rest—the 49—having neither character, capacity, strength or even health to recommend them, my idea is that the letter was written for "a lark" to watch what a jolly row it would kick up.

Why, Sir, I expect the answers you'll get to that letter will quite make an extra number.

After all, it pauls me, if true, when he's suffered so much from English crews that he was'nt more particular when he shipped his hands—or he was not a smart hand at the job—or mayhap he sailed his ship under wages, and good men would'nt look at him—and so he got a supply of lame ducks, who are as different a class of men as pigs are from parsons. If he wants a crew of good English seamen he can get them any day—if he comes to the Home—men with good characters for years, and we always have a good supply on hand. As for foreigners, I have nothing to say—there's good and bad amongst them, as well as in every other calling.

I remain, your humble servant

WM. PATTERSON, A.B.

The Sailors' Home, Well Street and Dock Street,
London Docks, E., 30th May, 1884.

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## SEAMEN AND CRIMPS.

*To the Editor of the "Nautical Magazine."*

SIR,—With so much talking and writing about Jack, seaworthy or unseaworthy, the following may be of some interest ; it is true anyway, which is more than can be said of a great deal one reads at various times in the papers and periodicals. Much has been written and said about crimps and their practices, but as far as I know, I have never seen any reason given for their existence, or how it is they are able to ship their farm labourers as seamen as was stated at a meeting of sailors held in the North some short time back.

Surely there is some reason why they can do this, in spite of the great seaports of England being flooded with first-class seamen ; though the latter part of this statement does not quite agree with my experience, but it is said to be the case, and also that they are starving for want of work.

I will endeavour to show why crimps flourish by the following incident :—

A large steamer (2,000 tons register) lying at Liverpool, and bound for Baltimore, shipped her crew on board (the custom in Liverpool and one to be followed at other large ports) two days before leaving, having had the pick of a large number of men, and apparently had a very fair lot of men on the articles.

Well, sailing day came, steam ready, pilot on board, everything ready, and the ship proceeded out of dock into the river ; then the crew were mustered, and it was found that five A.B.'s and three firemen were absent. Some of these men did not join, and the remainder actually left the ship as she passed through the dock entrance, reversing the old order of things and making a pier-head jump ashore after having joined. Well, the ship could not proceed short-handed ; what was to be done to prevent her losing the tide ?

Why, call in the crimp, who supplied substitutes immediately ; and his expenses being paid the ship proceeded.

But suppose there had been no crimp, what would have happened ?

Why this ; the ship would anchor in the river, and lose the tide to a certainty, whilst the master went on shore to ship fresh

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hands; and possibly, or rather most probably find on his return, that either the chief mate had been using force to keep the crew on board, or else that some more of them had left the ship during his absence, and consequently that he must go on shore again and ship others, there being nothing but actual force to prevent them calling a boat alongside and getting into her. This is no fancy sketch, it happened to myself.

This behaviour on the part of first class seamen, starving for want of employment, is quite usual in Liverpool, so much so, that it is the custom with the regular lines to have men in reserve when a ship leaves; and strangers have a crimp with a gang all ready in the event of desertion at the last moment.

I adopted the latter plan on three consecutive voyages, being a stranger, and always found it necessary. It was an expense, but saved time and trouble.

The law says that seamen shall give 24 hours' notice of their intention not to proceed to sea in the ship they have signed articles for, but this is practically a dead letter, they leave or sail just as they please, alter their minds at the last minute if they like, and there is nothing but force to stop them. Of course, the law gives the shipmaster an opportunity of reimbursing himself for any loss he may sustain by a seaman's breach of agreement, but that clause must have been added as a bit of sarcasm. Fancy suing a seamen or 100 seamen for the loss sustained by the detention of a 2,000-ton steamer with 50 passengers on board for one tide only, particularly as they are so hard up; it makes one laugh.

The foregoing is the cause of a crimp being in demand.

With regard to his men, I can give an opinion, as I have employed several. The seamen supplied by the crimp are just about the same quality as those that ship in the ordinary manner. A few in each case are good and the remainder bad. The great difference lies in the fact of the crimp's man being destitute of clothes and fond of drink, it is this last failing which causes him to fall into the hands of the crimp.

You will perhaps gather from the foregoing that the crimp is a very useful man, and until some considerable alteration is made in the laws relating to punishment of seamen for desertion, he will

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continue to exist; he is a necessity, and therefore must be, in spite of talk to the contrary.

At the same time it is within the power of the first class seamen who are starving for want of employment to close out the crimp just when they have a mind to do so, but it can only be done by their sailing in the ships for which they sign articles, or by giving proper notice of their intention in the event of changing their mind. No shipmaster goes to a crimp for a crew or part of a crew in the first instance, it is too expensive; it is only when he is left in the lurch at the last minute that he does so.

Why the men leave or fail to join is a mystery. The ship I quote above is a first-class passenger steamer, she does not carry emigrants or cattle, or deck cargo of any description. The accommodation and food are good. She belongs to one of the finest lines of mail steamers in England.

Perhaps the next sailors' meeting will throw some light on this subject.

In conclusion, I can only say that men who can behave in this manner at a port where A.B.'s wages are £4 per month, cannot possibly be starving for want of work; it must be a matter of no consequence to them if they turn to now or next week.

The Liverpool dock masters and pilots can substantiate these statements if necessary.

I am, sir, yours sincerely,

E. T. JONES,
Master s.s. *Nubian*.

Southampton, June 4th, 1884.

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## EXPLOSIVES ON BOARD SHIP.

*To the Editor of the "Nautical Magazine."*

Sir,—The explosion in a ship's magazine on board the steamship at Gravesend has led to an investigation into the matter, and no doubt the result will be a proposal for the better arrangement in ships' magazines, and a safer method for transport of combustible stores. It is quite obvious that a better arrangement should be

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sought for, because upon a ship's arrival in port, the custom of throwing unused stores overboard, is a wasteful expenditure, and removing gunpowder, pilot signals, &c., from the vessel in one parcel is, to say the least, very dangerous.

This danger is seriously augmented by the introduction amongst the stores of a light commonly known as a "Gamekeeper's Light." This light is ignited by friction at the extremity of the signal, the point of combustion being protected by a removable cap. However, the contrivance is a most perilous one to introduce amongst the loose bags of gunpowder in a ship's magazine, where friction would be the principal element introduced.

Another source of danger is sometimes caused by the Patent Distress Signals. These signals cannot be ignited either by heat, friction, or percussion, but fire spontaneously on water being admitted into apertures made in the tin, decomposing the phosphuret and phosphate of calcium, of which they are composed, and producing phosphuretted hydrogen, which, issuing out of the upper orifice and uniting with the atmosphere, bursts into a bright flame. These combustibles are most carefully arranged and hermetically sealed in tin cans ready for use. So far, they are out of danger, and we have to guard only against water being admitted into the interior of the signal.

When on shipboard they are generally stowed away with hopes of never being required, and, unless they are periodically inspected and the tin coated with some anti-corrosive, the sea atmosphere will be found to act chemically upon the solder used in the manufacture of the cans. This is caused, no doubt, by galvanic action, which sets up possibly by the mutual action of a combination of metals, or, more probably, the sea atmosphere may become vigorously engaged with any particles of iron that may be exposed; but, whatever the cause may be, corrosion acts upon the outer surface of these tin cans, and it becomes merely a question of time to perforate the tin, when the signal will become dangerous.

As an early indication of this decay the trade mark (placed upon each can) will be seen corroded and decomposed, and if allowed to remain so, a small hole in the tin around the edge of this metal label will make its appearance upon removing the corrosion. If

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the destructive agencies are not now guarded against, the bottom of the can will afterwards decay around the edges in the same manner and fall out, it being as before stated merely a question of time for such an occurrence to happen.

It is not the writer's wish to point out any defect or objection against the use of sealed combustibles as ship's stores, on the contrary, we are greatly indebted to the inventors for their application of science, to procure for the mariner an efficient and well adapted signal in so portable a form, and it may be questioned if they are responsible for allowing a yellow metal label to be soldered upon the outside of an iron, or rather tin vessel, that has to exist in the sea atmosphere, this being no doubt the nucleus or starting point of the evil.

On the other hand it is quite essential that we should be acquainted with the extent of the safety of these signals, and know of a ready method to guard against the possible intrusion of danger.

ARTHUR W. JEFFERY, F.R.M.S.,
Master Mariner.

s.s. *Teniers*, Monte Video,
May 15,

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## BOOKS RECEIVED.

*Our Seamarks.* A Plain Account of the Lighthouses, Lightships, Beacons, Buoys, and Fog-signals maintained on our Coasts for the Guidance of Mariners. By E. Price Edwards. London: Longmans. 1884.

THE principles of lighthouse construction, and the arrangements by which the coast line is marked, are generally regarded as of a purely technical character, and while the beneficial results are evident and duly appreciated, few people concern themselves with the practical details of this most important and interesting service.

Mr. Price Edwards has made an effort to place the knowledge of such matters within general reach. His little book on our sea-



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marks conveys comprehensive information on the various branches of coast marking service, and makes plain to his readers that which previously was probably more or less obscure. The general public will doubtless be glad to have a book of this kind available for reference, especially as it is written by an official who has spent many years of his life in the service; but the nautical community ought more especially to welcome it as affording them the means of making themselves fully acquainted with the methods and principles upon which our coasts are marked by day and by night, and of thus making themselves more familiar with the various warning and guiding signals, upon which they have to place dependence when navigating near our shores.

The arrangement of the work is simple and intelligible, the various branches of lighthouses, lightships, beacons, buoys, and fog-signals being dealt with seriatim, their uses indicated, and their principles of construction and placing described.

We note some passing references to the lighthouse illuminants controversy, and to the experiments now in progress, but the author is evidently too astute to commit himself to any definite expression of opinion on the subject. The facts are clearly and apparently impartially stated, so that a fairly accurate notion of the issues involved in the investigation now being carried out by the Trinity House may be arrived at.

The chapter on beacons and buoys appears to be a little confused, the sequence of description being not carried on so effectively as in the chapters on other branches of the service. But it is only fair to say that the system of buoyage for the United Kingdom appears itself to be in a somewhat unsettled condition, which may possibly account for Mr. Price Edwards's want of explicitness, but nevertheless the chapter is full of information of which a sailor ought to be in possession.

The chapter on fog-signals we think we have seen before, and is very complete and interesting.

A neatly lithographed lighthouse chart, showing the ranges of the principal lights on the British coasts, makes an effective frontispiece to Mr. Price Edwards's book, which is enriched also by numerous well executed engravings, illustrating the text. Mr.

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John Owen's design on the cover is very striking, and undoubtedly adds to the attractiveness of the book.

*Pilot Charts of the North Atlantic Ocean.* Published by the U.S. Hydrographic Office at Washington, D.C.

THE American Government has for some time kept well to the front in meteorological work, and much that has been done by the Signal Office of the U.S. War Department is of a nature especially calculated to be of value to the seaman.

The publication which we now notice and to which we have before briefly referred, emanates, however, from the Hydrographic Office. It consists of a single chart for each month, and gives valuable nautical notices, such as the establishment of new lights and the change in the position of buoys, also the tracks of storms, notices of ice reported, and of wrecks, distinguishing between those floating and sunk, and when derelicts are reported, month after month, their drift is shown by a dotted line; waterspouts are also shown. The above information for the month expired, is printed in red, and information for the ensuing month, which is tantamount to a prediction, is given in blue, and includes the prevailing winds and currents, the limits of trades, and the limits of ice. The routes to be followed by trans-Atlantic vessels are also given, as well as various other information of value to the navigator, such as fogs, the limits of storm areas, and the frequency with which gales may be expected.

The chart is sent to press on the first of each month, the news of the previous month being given as far as received, and with a view of rendering the chart as complete as possible, information of interest to mariners that can be utilised is earnestly solicited from the masters of vessels. A study of the limits of fog off the coast is mentioned as very desirable, and reports concerning it are especially requested; they may be sent to the central office at Washington, or to any of the branch offices.

The statement of probable weather for the coming month is not derived from current observations of existing meteorological conditions, but represents solely the average result of weather observations



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for the month during 40 years, being based on Maury's deductions, published in 1857, and verified by a great number of subsequent reports.

Copies of the chart may be obtained by masters of vessels, free of charge, by application to the Hydrographic Office in Washington, or to any of the branch offices at Boston, New York, Philadelphia, Baltimore, or San Francisco.

The chart for June was received in England before the middle of the month.

We much regret to learn by a subsequent announcement (received after the foregoing was in type), that in consequence of Congress having refused to grant the necessary funds, this chart of the North Atlantic, which has been for some time published monthly, is to be discontinued, and other valuable work brought to a close on the first of July. The pinching of this bureau is certainly economy on the "penny wise and pound foolish" system.

## Our Library Table.

The usual supply of *Notices to Mariners* and *Hydrographic Notices* (British and Foreign), are to hand, and in our "monthly abstract" of 39 of these notices, about 50 important changes are recorded, most of which our readers should forthwith compare with their charts.

The books, pamphlets, and papers on our table are as follows:— *The Science Monthly* (London: D. Bogue), for June, brings Vol. I. of a very useful and readable publication to a close, and henceforth it will be permanently doubled in size. In a *Letter to the Lords Commissioners of the Admiralty and to the President of the Board of Trade* (Spon: London), Admiral Fishbourne reiterates his well-known views on the load-line question and the stability of ships. *Belligerent Rights on the High Seas since the Declaration of Paris* (1856) is by Sir Travers Twiss, than whom we have no higher authority on the subject discussed. The latest quarterly number of *The Shipwrecked Mariner* is fully up to its usually interesting character. *Wall's Universal Code of Night Signals* is well explained and illustrated in a small pamphlet by the author, but we do not like the system.

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*Catechism of the Law of Storms* (Philip & Son: London) is a small brochure by Capt. J. Macnab, of the Liverpool Local Marine Board. It is intended for the general use of seamen as well as for the Board of Trade examinations, and is a concise digest of the subject.

*Brief and Simple Methods of Finding the Latitude and Longitude by Single and Double Altitudes, also new Time and Azimuth Tables*, by A. C. Johnson (Philip & Son: London), relates to determining the ship's position by a process so simple that it may be easily and quickly acquired.

*Report on the Exhibits at the Crystal Palace Electrical Exhibition*, 1882, by Ensign F. J. Sprague, is published by the Naval Intelligence Bureau of Navigation, Washington. The work is well executed, useful, and to the purpose; we saw in the *Revue Maritime et Coloniale* papers of a similar character on the Vienna Exhibition. How is it none of our people are sufficiently enterprising to produce such reports? Why should we be compelled to go to foreign sources for information of such importance?

*The Annual Report of the Marine Board of South Australia* for the year 1883, tells us that deepening operations are successfully carried on in the principal ports and harbours; that there are now thirty light stations on the coast; that the buoys, beacons and moorings (now numbering some hundreds) are in good order and carefully watched; that pilotage is non-compulsory at all the outports except Port Pirie and Port Augusta; that of 115 applicants for certificates of competency, 104 passed and 11 failed; that the number of deserters still increases, no less than 569 having been reported during 1883, as compared with 516 in 1882, including 5 mates, 430 A.B.'s., 75 O.S., and 16 apprentices; that the oyster fisheries are being gradually and wilfully destroyed—a common case where they are not looked after; that the lifeboats now carry oil as part of their equipment, and its use in troubled waters has many times proved to be efficacious; and that owing to the dredging, ships have no longer to wait (as formerly) several days for water to enable them to go up the Adelaide river. Masters

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should be apprized that they can now obtain a recently-prepared Chart of the Port Adelaide River.

*The Merchant Service; as it is and as it might be*, by Franklin Fox, formerly captain P. and O. Company, is a pamphlet upon which most of the questions affecting the well-being of seamen are considered from the master mariner's point of view. Mr. Fox among other things proposes that the master shall be required to report periodically on the condition of his vessel to the Board of Trade, his report being countersigned by the mate and chief engineer. He also says that on the question of "compensation for death or injury, every true friend of the sailor must feel that no praise can be too great for the President of the Board of Trade for manfully upholding this principle in the face of a 'hornets' nest' of opponents in his new Merchant Shipping Bill."

We have also received *Entscheidungen des Ober-Seeamts und der Seeämter des Deutschen Reichs*, 5th Vol., Hamburgh, 1884. In it are contained reports of Courts of Inquiries—five into losses at sea and three into collisions, one of the latter being between the German steamer *Kronprinz* and the British steamer *Ardandhu*. In the matter of printing and illustration of official reports of this character, the German government are certainly more liberal than our own, if we may judge by the blue-book before us.

*Revue Maritime et Coloniale* (Paris), for June, is full of good reading, scientific and historical, in both of which it delights, and there is a good map of the proposed ship canal across the Isthmus of Corinth. *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft V., besides the usual nautical and meteorological remarks, contains a note on the Hong Kong typhoon in July, 1883, and the commencement of a paper on the volcanic eruption in Sunda Strait. *Mittheilungen aus dem Gebiete des Seewesens* (Pola), No. IV., amidst its varied information, which, when not original, is always well selected, gives as usual an excellent summary of the nautical and meteorological subjects that have been discussed during the past two months. *Ahoi!* (Berlin), is presumably a specimen number of a new German publication intended for every class of seamen, and to embrace every nautical subject; the selected matter

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is good enough, but we think the arrangement must be better in order to be a success. *Meteorologische Zeitschrift* (Berlin), is the organ of the German Meteorological Society, and is edited by Dr. W. Köppen; the papers are of course contributed by scientists of standing. *Boletin de la Sociedad Geográfica de Madrid* (Madrid), for March and April, well represents the progress of geography and geology in Spain, and the papers which embrace the history of early oceanic adventure are always of special interest. *Rivista del Boletin Official de las Armas Generales é Institutos de Quardia civil y Carabineros* (Manila), No. IV., is well up to the mark, and indicates that literature, science and the arts are as much appreciated in the Philippines as in the mother country; it appears that some important railways are projected for these islands.

Van Nostrand's *Engineering Magazine* (New York, June, 1884), contains another article of the valuable series on testing machines, their history, construction, and use; also a second paper on "The Compound Engine considered in connection with its Steam-Generating Plant." *Rivista Marittima* (Rome, June, 1884), among other good papers has one upon the subject which is attracting so much attention just at present, "The Fuel of the Future." *Rivista della Marina Mercantile* (Trieste), No. 5, keeps up the good promise of the first number.

We have also to hand the latest numbers of *Hansa*, *Das Schiff*, *Le Yacht*, *L'Avenir Militaire*, the *New York Maritime Register*, the *Nautical Gazette* (U.S.), the *Marine Journal of Cincinnati*, the *Scientific American*, and the *San Pedro Shipping Gazette* of the West Coast of America, the editor of which appears to have been in considerable danger of late, due to his indefatigable hunting out of shams and chicanery.

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# TIDE TABLES FOR JULY, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | LONDON BRIDGE. | | HULL. | | NORTH SHIELDS | | LEITH. | | DEVONPORT. | | DOVER. | | WESTON-SUPER-MARE. | | LIVERPOOL. | | GREENOCK. | | QUEENSTOWN | | KINGSTOWN. | | LONDONDERRY. | | BREST. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| Tu | 1 | 7 47 | 8 14 | 0 14 | 0 44 | 9 43 | 10 15 | 8 35 | 9 7 | 11 18 | 11 48 | 4 54 | 5 19 | 0 1 | 0 28 | 4 59 | 5 31 | 5 41 | 6 9 | 10 55 | 11 27 | 5 4 | 5 34 | 2 17 | 2 51 | 9 51 | 10 24 |
| W | 2 | 8 43 | 9 16 | 1 14 | 1 44 | 10 47 | 11 18 | 9 40 | 10 12 | — | 0 22 | 5 46 | 6 15 | 0 59 | 1 33 | 6 5 | 6 42 | 6 40 | 7 18 | — | noon | 6 4 | 6 34 | 3 28 | 3 52 | 10 59 | 11 33 |
| Th | 3 | 9 53 | 10 26 | 2 14 | 2 44 | 11 49 | — | 10 42 | 11 11 | 0 59 | 1 35 | 6 46 | 7 19 | 2 7 | 2 41 | 7 16 | 7 47 | 7 46 | 8 18 | 0 33 | 1 6 | 7 4 | 7 33 | 4 19 | 4 44 | — | 0 6 |
| F | 4 | 10 58 | 11 29 | 3 13 | 3 42 | 0 18 | 0 46 | 11 39 | — | 2 9 | 2 41 | 7 52 | 8 23 | 3 15 | 3 48 | 8 17 | 8 45 | 8 49 | 9 19 | 1 38 | 2 9 | 8 2 | 8 31 | 5 7 | 5 30 | 0 37 | 1 7 |
| S | 5 | 11 59 | — | 4 10 | 4 36 | 1 18 | 1 37 | 0 6 | 0 31 | 3 11 | 3 39 | 8 50 | 9 14 | 4 20 | 4 48 | 9 10 | 9 32 | 9 47 | 10 12 | 2 38 | 3 4 | 8 59 | 9 24 | 5 51 | 6 12 | 1 34 | 1 57 |
| Su | 6 | 0 25 | 0 47 | 4 59 | 5 20 | 1 58 | 2 19 | 0 53 | 1 14 | 4 4 | 4 27 | 9 37 | 9 59 | 5 14 | 5 39 | 9 53 | 10 13 | 10 34 | 10 56 | 3 28 | 3 50 | 9 47 | 10 8 | 6 33 | 6 54 | 2 19 | 2 39 |
| M | 7 | 1 9 | 1 30 | 5 40 | 6 0 | 2 39 | 2 57 | 1 34 | 1 53 | 4 48 | 5 9 | 10 20 | 10 41 | 6 2 | 6 21 | 10 32 | 10 51 | 11 17 | 11 38 | 4 11 | 4 31 | 10 26 | 10 44 | 7 15 | 7 35 | 2 58 | 3 17 |
| Tu | 8 | 1 51 | 2 10 | 6 20 | 6 39 | 3 15 | 3 33 | 2 12 | 2 30 | 5 29 | 5 48 | 11 2 | 11 22 | 6 41 | 7 4 | 11 10 | 11 29 | 11 58 | — | 4 51 | 5 10 | 11 1 | 11 18 | 7 54 | 8 11 | 3 36 | 3 55 |
| W | 9 | 2 27 | 2 45 | 6 58 | 7 17 | 3 50 | 4 8 | 2 48 | 3 5 | 6 6 | 6 24 | 11 42 | — | 7 28 | 7 41 | 11 48 | — | 0 18 | 0 37 | 5 29 | 5 47 | 11 36 | 11 54 | 8 28 | 8 45 | 4 18 | 4 31 |
| Th | 10 | 3 2 | 3 20 | 7 35 | 7 53 | 4 26 | 4 44 | 3 22 | 3 39 | 6 42 | 6 59 | 0 1 | 0 20 | 7 58 | 8 15 | 0 6 | 0 24 | 0 55 | 1 13 | 6 5 | 6 23 | — | 0 12 | 9 1 | 9 16 | 4 48 | 5 5 |
| F | 11 | 3 37 | 3 55 | 8 10 | 8 27 | 5 2 | 5 21 | 3 56 | 4 14 | 7 15 | 7 32 | 0 40 | 1 0 | 8 32 | 8 50 | 0 42 | 1 0 | 1 31 | 1 49 | 6 41 | 7 0 | 0 30 | 0 49 | 9 38 | 9 51 | 5 23 | 5 41 |
| S | 12 | 4 13 | 4 33 | 8 45 | 9 5 | 5 40 | 6 0 | 4 33 | 4 53 | 7 49 | 8 8 | 1 20 | 1 40 | 9 8 | 9 26 | 1 18 | 1 37 | 2 8 | 2 27 | 7 19 | 7 39 | 1 9 | 1 29 | 10 9 | 10 28 | 6 0 | 6 20 |
| Su | 13 | 4 52 | 5 11 | 9 25 | 9 46 | 6 20 | 6 41 | 5 14 | 5 36 | 8 27 | 8 46 | 2 0 | 2 21 | 9 44 | 10 2 | 1 58 | 2 16 | 2 46 | 3 6 | 7 59 | 8 19 | 1 49 | 2 10 | 10 49 | 11 13 | 6 40 | 7 1 |
| M | 14 | 5 30 | 5 52 | 10 7 | 10 30 | 7 3 | 7 27 | 5 59 | 6 23 | 9 5 | 9 25 | 2 42 | 3 4 | 10 20 | 10 39 | 2 37 | 2 58 | 3 26 | 3 47 | 8 39 | 9 0 | 2 38 | 2 57 | 11 39 | — | 7 24 | 7 48 |
| Tu | 15 | 6 14 | 6 38 | 10 55 | 11 28 | 7 53 | 8 21 | 6 49 | 7 17 | 9 48 | 10 13 | 3 27 | 3 51 | 10 59 | 11 21 | 3 21 | 3 46 | 4 10 | 4 34 | 9 23 | 9 48 | 3 21 | 3 47 | 0 9 | 0 43 | 8 13 | 8 40 |
| W | 16 | 7 3 | 7 31 | 11 54 | — | 8 52 | 9 26 | 7 47 | 8 19 | 10 40 | 11 10 | 4 16 | 4 42 | 11 47 | — | 4 14 | 4 44 | 5 0 | 5 28 | 10 14 | 10 43 | 4 16 | 4 48 | 1 20 | 1 58 | 9 8 | 9 39 |
| Th | 17 | 8 0 | 8 32 | 0 28 | 1 2 | 10 2 | 10 38 | 8 54 | 9 31 | 11 45 | — | 5 9 | 5 38 | 0 17 | 0 51 | 5 18 | 5 56 | 5 58 | 6 31 | 11 18 | 11 53 | 5 21 | 5 54 | 2 38 | 3 14 | 10 14 | 10 51 |
| F | 18 | 9 7 | 9 48 | 1 36 | 2 10 | 11 18 | 11 48 | 10 6 | 10 40 | 0 24 | 1 5 | 6 9 | 6 44 | 1 27 | 2 5 | 6 35 | 7 13 | 7 6 | 7 43 | — | 0 30 | 6 27 | 7 1 | 3 46 | 4 16 | 11 30 | — |
| S | 19 | 10 23 | 10 59 | 2 44 | 3 17 | — | 0 21 | 11 14 | 11 46 | 1 46 | 2 26 | 7 23 | 8 0 | 2 44 | 3 24 | 7 49 | 8 23 | 8 21 | 8 57 | 1 8 | 1 47 | 7 35 | 8 10 | 4 44 | 5 11 | 0 9 | 0 45 |
| Su | 20 | 11 37 | — | 3 50 | 4 22 | 0 52 | 1 22 | — | 0 16 | 3 2 | 3 35 | 8 34 | 9 6 | 4 4 | 4 42 | 8 55 | 9 24 | 9 31 | 10 3 | 2 23 | 2 56 | 8 44 | 9 17 | 5 38 | 6 5 | 1 18 | 1 49 |
| M | 21 | 0 10 | 0 41 | 4 52 | 5 20 | 1 51 | 2 18 | 0 45 | 1 13 | 4 6 | 4 36 | 9 37 | 10 7 | 5 16 | 5 48 | 9 52 | 10 19 | 10 34 | 11 4 | 3 27 | 3 57 | 9 47 | 10 14 | 6 33 | 7 1 | 2 18 | 2 45 |
| Tu | 22 | 1 8 | 1 37 | 5 47 | 6 14 | 2 44 | 3 9 | 1 40 | 2 6 | 5 4 | 5 31 | 10 35 | 11 2 | 6 18 | 6 45 | 10 46 | 11 12 | 11 32 | 11 59 | 4 25 | 4 52 | 10 38 | 11 2 | 7 29 | 7 55 | 3 11 | 3 37 |
| W | 23 | 2 3 | 2 27 | 6 40 | 7 5 | 3 33 | 3 57 | 2 31 | 2 55 | 5 56 | 6 21 | 11 29 | 11 54 | 7 11 | 7 35 | 11 37 | mtd. | — | 0 25 | 5 17 | 5 42 | 11 25 | 11 48 | 8 18 | 8 39 | 4 1 | 4 25 |
| Th | 24 | 2 51 | 3 14 | 7 28 | 7 50 | 4 20 | 4 43 | 3 17 | 3 38 | 6 44 | 7 5 | — | 0 18 | 7 57 | 8 18 | — | 0 23 | 0 49 | 1 12 | 6 5 | 6 26 | — | 0 11 | 8 59 | 9 19 | 4 47 | 5 7 |
| F | 25 | 3 36 | 3 57 | 8 11 | 8 31 | 5 4 | 5 25 | 3 59 | 4 20 | 7 24 | 7 43 | 0 41 | 1 3 | 8 37 | 8 56 | 0 44 | 1 4 | 1 33 | 1 53 | 6 46 | 7 6 | 0 33 | 0 54 | 9 38 | 9 57 | 5 27 | 5 47 |
| S | 26 | 4 20 | 4 40 | 8 51 | 9 11 | 5 46 | 6 7 | 4 41 | 5 2 | 8 2 | 8 21 | 1 25 | 1 47 | 9 14 | 9 32 | 1 24 | 1 44 | 2 13 | 2 33 | 7 26 | 7 46 | 1 15 | 1 36 | 10 16 | 10 36 | 6 7 | 6 27 |
| Su | 27 | 5 1 | 5 19 | 9 31 | 9 52 | 6 28 | 6 49 | 5 22 | 5 43 | 8 38 | 8 54 | 2 8 | 2 29 | 9 50 | 10 7 | 2 4 | 2 24 | 2 53 | 3 12 | 8 5 | 8 24 | 1 57 | 2 18 | 10 56 | 11 19 | 6 47 | 7 7 |
| M | 28 | 5 39 | 5 58 | 10 13 | 10 35 | 7 10 | 7 32 | 6 6 | 6 29 | 9 11 | 9 28 | 2 50 | 3 10 | 10 21 | 10 40 | 2 48 | 3 2 | 3 32 | 3 52 | 8 42 | 9 1 | 2 40 | 3 2 | 11 45 | — | 7 28 | 7 49 |
| Tu | 29 | 6 19 | 6 40 | 10 58 | 11 22 | 7 55 | 8 19 | 6 52 | 7 16 | 9 46 | 10 6 | 3 20 | 3 49 | 10 57 | 11 16 | 3 22 | 3 46 | 4 12 | 4 32 | 9 21 | 9 42 | 3 24 | 3 47 | 0 18 | 0 43 | 8 10 | 8 33 |
| W | 30 | 7 3 | 7 25 | 11 49 | — | 8 46 | 9 16 | 7 42 | 8 10 | 10 28 | 10 54 | 4 10 | 4 32 | 11 30 | — | 4 7 | 4 34 | 4 54 | 5 19 | 10 4 | 10 31 | 4 12 | 4 39 | 1 16 | 1 49 | 8 58 | 9 20 |
| Th | 31 | 7 51 | 8 18 | 0 19 | 0 50 | 9 49 | 10 23 | 8 41 | 9 16 | 11 28 | 11 56 | 4 57 | 5 25 | 0 6 | 0 37 | 5 5 | 5 40 | 5 47 | 6 18 | 11 3 | 11 38 | 5 9 | 5 41 | 2 23 | 3 0 | 9 59 | 10 36 |

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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* — *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −3 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 18 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 8 | Brest |
| Boulogne | +0 18 | Dover |
| Bridport | +0 24 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbellton | −0 23 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 3 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 3 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 33 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 53 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 53 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 3 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 48 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 18 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 13 | Devonport |
| Peterhead | −1 48 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 38 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 8 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 58 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 22 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Quessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 22 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 48 | London |
| Youghall | +0 18 | Queenstown |

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# MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 201 | England—Goodwin Sands—South Sand Head Light-vessel | Lights to be altered, Nov. 1. |
| 202 | ,, East Coast—Humber River—Hull Road | New light buoy. |
| 203 | ,, ,, Winterton Light | Alteration in character. |
| 204 | ,, West Coast—Carnarvon Bay Light-vessel | Fog-signal to be altered, Sept. |
| 205 | ,, ,, St Bees; Skerries; Bardsey; and Smalls | Lights to be altered, Oct. |
| 206 | ,, ,, Morecambe Bay—Piel Harbour | New light-vessel. |
| 207 | Ireland—East Coast—Belfast Lough | Alteration in buoyage. |
| 208 | ,, West Coast—Shannon River | Buoyage to be altered, Sept. |
| 209 | North Sea—Jade River—Aussen Jade Light-vessel | Altered in position. |
| 210 | ,, Elbe River — Cuxhaven Low Light | Arc of visibility. |
| 211 | Baltic Entrance — Kattegat — Pater Noster Rocks — Graen Holm | Proposed new light. |
| 212 | ,, Great Belt—Langeland — Lohals Harbour | Light altered in character. |
| 213 | Mediterranean—Italy—Giglio Island | Particulars of Fenaio Point Light. |
| 214 | ,, Ponza Islands—Zanone Island — Cape Negro | New light. |
| 215 | ,, Ionian Sea — Corfu South Channel—Lefchimo Point | Light-vessel withdrawn. |
| 216 | ,, Karamania — Mersyn | Particulars of light. |
| 217 | ,, Syria—Luad Island | New light. |
| 218 | Black Sea—Dniester—Tsarigrad Mouth | Beacons altered in position. |
| 219 | ,, Sea of Azof — Berdiansk Point | Permanent light re-exhibited. |
| 220 | Red Sea—Nubia | Shoal discovered. |
| 221 | ,, ,, Sawákin | Reefs near fairway. |
| 222 | Bay of Bengal — Akyab Approach—Oyster Reef Lighthouse | Destroyed by cyclone, May. |
| 223 | China Sea—Gulf of Siam—Pulo Panjang—Peak Island | Reef discovered. |
| 224 | ,, Philippines—Panay Island Ilo Ilo | New harbour light. |
| 225 | Japan—Nipon—Gulf of Osaka—Wadano-misaki | Light from new lighthouse. |
| 226 | Korea Strait | Cable between Japan and Korea. |
| 227 | Australia—North-East Coast — Inner Route—Halfway Island | New reef discovered. |
| 228 | Tasmania—Derwent River | Pilot station. |
| 229 | New Zealand—Middle Island—Oamaru | New harbour light. |
| 230 | South America—Brazil—Jaguarybe and Cotinguiba Rivers | Particulars of lights. |
| 231 | ,, ,, San Joao Islands | New light. |

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MONTHLY ABSTRACT OF NAUTICAL NOTICES—*Continued.*

| No. | PLACE. | SUBJECT. |
|---|---|---|
| 232 | SOUTH AMERICA—Venezuela — Orinoco River | Light-vessel re-established. |
| 233 | UNITED STATES—Ga. and S. Carolina—Savannah River | Various range lights. |
| 234 | „ New York — Latimer Reef—Fisher Island Sound | New light. |
| 235 | „ „ Hudson River | New light. |
| 236 | „ Massachusetts — Shovelful Shoal | Light-ship changed in position. |
| 237 | NOVA SCOTIA—Bay of Fundy—Abbot Island | New light. |
| 238 | „ „ Yarmouth—Bunker Island Light-house | Fog-signal proposed. |
| 239 | „ Basin of Mines—Avon River—Horton Bluff | Permanent light re-exhibited. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

201.—ENGLAND.—*South East Coast.—Goodwin Sands.—South Sand Head Light-Vessel.—Alteration in Character of Light.*—On or about the 1st November, 1884, it is intended to alter the character of the South Sand head light from fixed to double flashing every half-minute, showing *two successive flashes, one short, one long*, in the manner following, viz.:—A flash of 1½ second, an eclipse of 6 seconds; and a flash of 5 seconds, and an eclipse of 17½ seconds. The character of the fog-horn will remain as before, viz., 3 blasts in quick succession every two minutes; the first blast a low note, the second a high note, and the third a low note. Further Notice will be given.

202.—ENGLAND.—*East Coast.—Humber River.—Light Buoy in Approach to Hull Road.*—On the 13th May, 1884, a light would be exhibited from a buoy placed at the moorings of No. 11 B, southern approach to Hull road, Humber river. The light is *amber* coloured. The buoy is numbered 11, and painted black and white in vertical stripes.

203.—ENGLAND.—*East Coast.—Winterton Light.—Alteration in*

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*Character*.—In the month of October, 1884, the present fixed light at Winterton will be made *occulting*, giving *three occultations every minute* as follows, viz. :—Light, 50 seconds; eclipse, 2 seconds; light 2 seconds; eclipse, 2 seconds; light, 2 seconds; eclipse, 2 seconds. Further Notice will be issued.

204.—ENGLAND.—*West Coast.—Alteration of Fog-Signal at Carnarvon Bay Light-Vessel.*—About the beginning of September 1884, the character of the fog-signal on board this light-vessel will be altered, so that in thick or foggy weather it will give *two blasts* in quick succession *every two minutes*, in the manner following, viz.: A low note of 2½ seconds' duration; silence, 2½ seconds; a high note of 2½ seconds, followed by a silent interval of 112½ seconds. In other words, the *double blast* will be *low-high every two minutes*.

205.—ENGLAND.—*West Coast.—Alteration in character of the following Lights: St. Bees; Skerries; Bardsey and Smalls.*—It is intended in the month of October, 1884, to alter the present character of the above lights, so that they shall thereafter be occulting, viz. :—

*St. Bees* will give *two occultations every half-minute* as follows, viz.:—Light, 24 seconds; eclipse, 2 seconds; light, 2 seconds; eclipse, 2 seconds.

*Skerries* will give *three occultations every minute*:—Light, 50 seconds; eclipse, 2 seconds; light, 2 seconds; eclipse, 2 seconds; light, 2 seconds; eclipse, 2 seconds.

*Bardsey* will give *one occultation every half-minute*:—Light, 27 seconds; eclipse, 3 seconds.

*Smalls* will give *two occultations every minute*:—Light, 54 seconds; eclipse, 2 seconds; light, 2 seconds; eclipse, 2 seconds.

Further Notice will be issued.

206.—ENGLAND.—*West Coast.—Morecambe Bay.—Light-vessel in Approach to Piel Harbour.*—A small light-vessel has been placed about three cables seaward of Lightning knoll, approach to Piel and Barrow harbours. It is a *fixed white* light. The light-vessel is moored in 24 feet at low water spring tides, with leading lights, Nos. 1 and 2, in line, and with the following bearings :—South End farm, Walney island, N.N.E. ¼ E.; Mort scar, E. ¼ N. *Variation*, 20¼° *W*.

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207.—IRELAND.—*East Coast.—Belfast Lough.—Alteration in Buoyage.*—On and after 1st June, 1884, the starboard-side of the channel, when entering Belfast harbour from seaward, will be marked by uniformly-coloured *black* buoys; and the port-side of the channel will be marked by *red* buoys.

208.—IRELAND.—*West Coast.—Shannon River.—Intended Alterations in Buoyage.*—On or about 1st September, 1884, the following alterations will be made in the buoyage of Shannon river:—

*Rinana Shoal.*—A first-class can buoy, painted red, will be substituted for the present second-class conical red buoy.

*Doonaha Shoal.*—A second-class can buoy, painted red, will be placed in 5¼ fathoms, S. 27° W., 1½ cable from the 18-feet patch on the shoal, with the following bearings and distances:—South extreme of Kilcradan point battery, W. ¼ S., distant 2 miles (nearly); Doonaha battery, N.N.E. ¾ E., distant 9½ cables; Beal bar buoy, south, distant 9¼ cables.

*Carrig Shoal.*—A second-class conical buoy, painted black, will be placed in 28 feet, N. 16° E., half a cable from the northern edge of Carrig shoal, with the following bearings and distances:—Corran point battery, S.W. ¼ W., distant 7¼ cables; Rinana buoy, N.W. ¼ W., distant 7¼ cables; Scattery island lighthouse, N. ¾ W., distant 10¼ cables. *Variation*, 23° *W.*

209.—NORTH SEA.—*Jade River Entrance.—Aussen Jade Light-vessel.—Alteration in Position.*—Light-vessel would be replaced at her station, as soon after 22nd May, 1884, as the weather would permit; but in consequence of the eastern edge of Minsener sand having shifted, it would be moored eastward of former position, in 8 fathoms, with the following bearings:—Minsener light-vessel, S. 14° E.; Schillighörn lighthouse, S. 24° W.; Wangeroog light-house, N. 86° W. *Variation*, 14° *W.*

210.—NORTH SEA.—*Elbe River.—Cuxhaven Low Light.—Arc of Visibility.*—The low light at Cuxhaven is not visible between black buoy L and white buoy 11; but between the bearings of S. ¼ E., through south, and S.W. *Variation*, 14° *W.*

211.—BALTIC ENTRANCE. — *The Kattegat.* — *Sweden.* — *Pater Noster Rocks.—Intended Leading Light on Grären Holm.*—During the summer of 1884, a leading light will be exhibited on Grären

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holm, southward of Kladesholm, Pater Noster rocks. Position approximate, lat. 57° 56¾′ N. long. 11° 31′ E. Further Notice will be given.

212.—Baltic Entrance. — *Great Belt. — Langeland. — West Coast.—Alterations in Lohals Harbour Light.*—Under date 24th April, 1884, the following alteration has been made in the colour of the harbour light at Lohals, west coast of Langeland. The light is *fixed red.* The period of exhibition has also been altered—in future, the light will be shown annually from 1st September to 1st April.

213.—Mediterranean.—*Italy.—West Coast.—Giglio Island.—Particulars of Fenaio Point Light.*—With reference to notice in 1883, on the exhibition of a *flashing* white light on Fenaio point, westward of Morto point, northern extreme of Giglio island, Tuscan archipelago; the light shows flashes of *five seconds'* duration, with eclipses of *ten seconds;* visible from a distance of 16 miles.

214.—Mediterranean.—*Italy.—West Coast.—Ponza Islands.—Zannone Island.—Light on Cape Negro.*—On 15th May, 1884, a light would be exhibited from a lighthouse erected on cape Negro, the northern extreme of Zannone island, Ponza islands. It will show a *white* light, with flashes *every five seconds,* visible through an arc of 221°, or except where obscured by the high land of the island. Elevated 38 feet above the sea, and visible from a distance of 11 miles. The lighthouse, octagonal in shape, rises above a one-storied dwelling; the whole being painted yellow. Position, lat. 40° 58′ 25″ N., long. 13° 8′ 15″ E.

215.—Mediterranean.—*Ionian Sea.—Corfu South Channel.—Withdrawal of Lefchimo Point Light-Vessel.*—With reference to Notice 188, p. 522, on the exhibition of a *revolving* white light on the northern point of Sivota (Sybota) island, near Mourzo (Mourtzo or Murto), eastern side of Corfu South channel, coast of Albania; on 13th May, 1884, consequent on the exhibition of Sivota island light, Lefchimo (Alefkino) point light-vessel, on the western side of Corfu South channel, coast of Corfu, would be withdrawn.

216.—Mediterranean.—*Karamania.—Particulars of Mersyn Light.*—With reference to Notice in 1883, on a new lighthouse having been erected near Mersyn (Mersyna), on the extremity of the point, about half a mile south-westward of the old lighthouse;

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it is a *fixed and flashing white* light, showing a *fixed* light for a period of *sixty seconds;* eclipse of *fifteen seconds;* a *flash* of *six seconds;* followed by an eclipse of *fifteen seconds.* Elevated 58 feet above the sea, and visible from a distance of 10 miles.

217.—MEDITERRANEAN.—*Syria.—Intended Revolving Light on Ruad Islaud.*—A Turkish Notice, dated 10th May, 1884, states that a light will shortly be exhibited from a lighthouse in course of construction on Ruad (Arvet-Adassi) island. It will be a *revolving white* light, visible from a distance of 15 miles. Position approximate, lat. 34° 51′ 40″ N., long. 35° 51′ 5″ E. Further Notice will be given.

218.—BLACK SEA.—*Dniester Estuary.—Tsarigrad Mouth.—Alteration in Positions of Beacons.*—With reference to the re-exhibition of leading lights from two beacons (constructed of wood and painted black) situated on the northern side of Tsarigrad mouth, Dniester estuary:—On 1st May, 1884, in consequence of changes having taken place in the channel, the leading lights were exhibited from beacons erected on the *southern* side of Tsarigrad mouth. The western light, shown from the S.W. point of the channel, is a *fixed white* light, elevated 46 feet above the sea, and visible from a distance of 8 miles. The eastern light, situated S. 81½° E., 82 yards from the western light, is a *fixed red* light, elevated 17 feet above the sea, and visible from a distance of 5 miles. In May, the least depth on the bar of Tsarigrad mouth was 7 feet; the channel is marked by buoys as well as by the beacons in line bearing N. 81½° W. Should changes in the channel (which are frequent) prevent the beacons in line being used as a leading mark, the East beacon light will be masked, and the white light on the western beacon alone be shown. *Variation*, 3½° *W.*

219.—BLACK SEA.—*Sea of Azov.—Berdiansk Point.—Permanent Light Re-exhibited.*—With reference to Notice 66, p. 161, on the electric light at the southern extremity of Berdiansk point, being temporarily shown as a *fixed* light, pending repairs to the apparatus of the flashing light, the light now shows as formerly, a *flashing white* light, at intervals of *five seconds.*

220.—RED SEA.—*Nubia.—Le Mercier Shoal.*—The French cruiser *Duchaffaut*, reports the existence of a shoal, with 10 to 13

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feet over it, about 6 miles S.S.E. (true) from Mersá Durúr and 3 miles from the nearest shore. This shoal, not marked by any ripple, is in the following approximate position :—Lat. 19° 44′ N., long. 37° 17′ 35″ E.

221.—Red Sea.—*Nubia.—Reefs in Approach to Sawákin.*—The Naval Commander-in-Chief on the East India station reports the existence of two reefs lying near the fairway of approach to Sawákin from the north-eastward :—

(1.) A reef, on which the sea was seen to break from H.M.S. *Jumna*, lies with Hind Kadám (Hinde Gedam) island bearing S.E. ¼ E., distant 10½ miles. Position approximate, lat. 19° 27′ N., long. 37° 43′ E.

(2.) A reef lying with Sawákin harbour entrance bearing W.S.W., distant 10 miles. This reef is difficult to distinguish, and when first seen from H.M.S. *Jumna*, was indicated only by discoloured water, but on a subsequent occasion the sea was observed to break slightly on it. Position approximate, lat. 19° 13′ N., long. 37° 31¼′ E. *Variation*, 4¾° *W.*

222.—Bay of Bengal.—*Akyab Approach.—Oyster Reef Lighthouse.*—Oyster reef lighthouse, approach to Akyab, Arracan river, has been destroyed by a cyclone.

223.—China Sea.—*Gulf of Siam.—East Coast.—Pulo Panjang.—Reef S.S.E. of Peak Island.*—Commander Hope, H.M.S. *Zephyr*, reports the existence of a reef lying in the fairway of the channel between Peak island and White rock, southward of Pulo Panjang, east coast of gulf of Siam :—This reef (*Rajanattianuhar reef*)—on which the British steam-vessel *Rajanattianuhar* grounded on 1st March, 1884, and became a wreck—consists of two large heads of rock, with 4 feet on them at low water, surrounded at the distance of about one cable by a fringe of coral, circular in shape and steep-to. On the reef the depths are 2¼ fathoms near the centre and 5 fathoms at the outer edge. The centre of the reef lies with the following bearings and distances :—White rock, S.W. by W. ¾ W., distant 13¼ cables ; Peak island, N.N.W., distant 8¼ cables. Position, lat. 9° 15′ 50″ N., long. 130° 28′ E. In April, 1884, the wreck was lying near the centre of the reef. *Variation*, 2¼° *E.*

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224.—China Sea. — *Philippine Islands. — Panay Island.— Harbour Light at Ilo Ilo.*—A harbour light is now exhibited from a lighthouse at Ilo Ilo, on the eastern side of the entrance to Ilo Ilo river. It is a *fixed red* light, visible through an arc of 240° or between the bearings of N. 7° E., through west, and S. 53° E. Elevated 21 feet above high water, and should be seen from a distance of 9 miles. The lighthouse, 20 feet high, is painted gray; lantern, yellow. Position approximate, lat. 10° 42½′ N., long. 122° 34′ E. *Variation*, 1¼° E.

225.—Japan.—*Nipon.—Gulf of Osaka.—Wada-no-Misaki Light exhibited from New Lighthouse.*—On 1st March, 1884, Wada-no-Misaki light, S.W. of Kobé anchorage, would be exhibited from a new lighthouse, erected 50 feet westward of the position of the old wooden lighthouse. It is a *fixed red* light, visible between the bearings of N. 68° E., through west, and S. 27° E. Elevated 52 feet above the sea, and should be seen from a distance of 12 miles. The new lighthouse is constructed of iron, 46 feet high, hexagonal in shape, and painted white. *Variation*, 4¼° *W.*

226.—Korea Strait.—*Submarine Telegraph Cable between Japan and the Korea.*—A submarine telegraph cable has been laid in Korea strait from Kotomura (lat. 33° 32¾′ N., long. 129° 55½′ E.), N.W. coast of Kiusiu, Japan; to Tsau-liang-hai (Fusan or Chosan harbour), S.E. coast of the Korea. The cable is landed at intermediate stations on Iki sima and Tsu-sima. From Kotomura it is laid between Kagara sima and Oögawa sima to the eastern shore of Go no Ura (Gonolbra), Iki sima; thence to Itsuhara harbour, on the east coast of Tsu sima; and finally from Komada (Komotamura), on the west coast of Tsu sima, to the Japanese station at Fusan. In the inner part of Fusan harbour the cable is marked by buoys.

*Note.*—Anchorage in the vicinity of this cable is prohibited.

227.—Australia.—*N.E. Coast.—Inner Route.—Reef Reported S.W. of Halfway Island.*—Reported to exist near the course recommended for the inner route, and about two-thirds of a mile north-westward of Pearn reef. This reef (*Pioneer reef*), of mush-room coral, is stated to be small in extent, awash at low water, and to lie with the following approximate bearings:—Halfway island,



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N.E. ½ N.; S.W. Boydong cay, S.E. ½ E. Position approximate, lat. 11° 24′ 40″ S., long. 142° 57′ E. *Variation*, 5° *E.*

228.—Tasmania.—*South Coast.—Derwent River.—Pilot Station.*—The only station for Derwent river, is at Pearson point, at the junction of D'Entrecasteaux channel and Derwent river; and the pilot stations formerly at Recherche bay, in the southern entrance of D'Entrecasteaux channel, and on North Bruny island, about 4 miles from Iron Pot lighthouse, are discontinued.

*Note.*—The pilots are provided with a whale boat, in which they board inward bound vessels in Storm bay, at a distance depending upon the weather.

229.—New Zealand.—*Middle Island.—East Coast.—Oamaru.—Harbour Light on North Mole.*—On 1st April, 1884, a harbour light would be exhibited from the eastern end of the north mole at Oamaru. It is a *fixed red* light, elevated about 14 feet above high water. On the above date, this light was distant from the *green* light on the breakwater 800 feet, the lights bearing from each other E.N.E. and W.S.W.; between which is the harbour entrance.

*Note.*—Vessels entering the harbour, should give the extremity of the breakwater a berth of at least 30 fathoms, keeping the two red buoys (north and N.W. of the breakwater) on the starboard-hand, distant 10 to 20 fathoms. The mole is being daily extended towards the breakwater, and the mole light will gradually tend more southerly from the breakwater light, until the mole is completed, the lights will then bear from each other about N.E. ½ E. and S.W. ½ W. *Variation*, 16¼° *E.*

230.—South America.—*Brazil.—Provisional Light at Jaguarybe River Entrance.*—Pending the completion of a lighthouse in course of construction, a provisional light is exhibited on the headland within the bar, at Jaguarybe (or Aracati) river entrance. It is a *fixed white* light, visible from a distance of 10 miles. The lighthouse is circular in shape, with octagonal base. Position approximate, lat. 4° 25′ S., long. 37° 45′ W.

(2.) *Cotinguiba River Entrance.—Destruction of Lighthouse.*—The lighthouse (Aracaju) on the south side of Cotinguiba (or Contandiba) river entrance, has been destroyed by fire.

231.—South America.—*Brazil.—Light on San João Islands.*—

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With reference to Notice in 1883, on the intended exhibition of a light on San João islands, on 1st May, 1884, the light would be exhibited from a lighthouse erected near the N.E. extreme of the islands. It is a *fixed white* light, visible seaward through an arc of 200°, elevated 78 feet above high water, and should be seen from a distance of 14 miles. The lighthouse, constructed of iron, and hexagonal in shape (Mitchell system—spiral supports and columns), is painted red. The keeper's dwelling is painted white. Position approximate, lat. 1° 17½′ S., long. 44° 55′ W.

232.—South America.—*Venezuela.—Orinoco River Entrance. —Light-vessel Re-established.*—With reference to Notice in 1880, on the withdrawal of the light-vessel at Orinoco river entrance, in the beginning of March, 1884, a new light-vessel was placed in Boca Grande (Boca de Navios), Orinoco river. It shows a *fixed white* light, elevated 50 feet above the sea, and visible from a distance of about 9 miles. The light-vessel is moored in 18 feet, between Barima point and Sabaneta bank, and at the distance of 7 miles from Barima point. Position, lat. 8° 42′ N., long. 60° 20′ W.

*Note.*—On this light-vessel being placed in position, a new regulation for pilots was established, by which a sufficient number of pilots are now stationed on board the light-vessel.

233.—United States.—*Georgia and South Carolina.—Establishment of additional Lights on the Savannah River.*—On and after May 26, 1884, the following lights will be exhibited from structures recently erected on the Savannah river, in addition to the lights already established:—

*Venus Point Range*, consists of two beacons, situated on Jones's island, S. C., and is intended to guide between the Bloody point and Tybee Knoll Cut ranges. The distance between the beacons is about 1⅛ mile, and the line connecting them has a magnetic bearing of about E.S.E. ¼ E. The front light is a *fixed white* reflector light, shown at a height of 30 feet above mean sea level, from a square skeleton iron tower, painted brown, with enclosed lantern. The rear light is a *fixed white* reflector light, shown at a height of 87 feet above mean sea level, from a triangular skeleton iron tower, painted brown. The keeper's dwelling,



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painted white, stands on the range-line in front of and near the rear light. The approximate position is—Front Beacon, lat. 32° 3′ 25″ N.; long. 80° 55′ 33″ W.

*Elba Island Range* consists of two beacons, situated on Elba island, Ga., and is intended to guide from the Tybee Knoll Cut range through the channel south of Oyster Bed beacon. The distance between the lights is about ½ mile, and the line connecting them has a magnetic bearing of about S.E. by E. ¾ E. The front light is *fixed red*, shown at a height of 44 feet above mean sea level, from a triangular skeleton iron tower, painted brown. The rear light is *fixed red*, shown at a height of 70 feet above mean sea level, from a triangular skeleton iron tower, painted brown. The approximate position is—Front Beacon, lat. 32° 4′ 23″ N., long. 80° 58′ 28″ W.

*Long Island Beacon, No.* 1. — Situate on the easterly end of Long Island, Ga., and intended to lead vessels across the river from the Elba island range soon after passing the Oyster Bed beacon. The light is *fixed red*, shown at a height of 44 feet above mean sea level, from a triangular skeleton iron tower, painted brown. Its approximate position is—lat. 32° 2′ 7″ N., long. 80° 64′ 55″ W.

*Long Island Beacon, No.* 2. – Situate on the westerly end of Long island, Ga., and intended to show vessels when to cross the river to Venus point rear beacon, This light is exactly like No. 1, and its approximate position is—lat. 32° 2′ 42″ N., long. 80° 56′ 2″ W.

*Jones's Island Beacon.*—Situate on the westerly end of Jones's island, S. C., and intended to show vessels when to cross the river to the front beacon of the Elba island range. This light is exactly like the lights on Long island, and its approximate position is—lat. 32° 4′ 25″ N., long. 80° 57′ 32″ W.

*Opposite Upper End of Elba Island.*—Situated on the south Carolina shore, and intended to lead across the river from the rear light of the Elba island range. The light is exactly like the preceding, and its approximate position is—lat. 32° 5′ 56″ N., long. 80° 59′ 47″ W.

*Fort Jackson Range* consists of two beacons situated near fort

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Jackson, on the Georgia shore, and is intended to guide past obstructions near the N.W. end of Elba island. The distance between the lights is about $\frac{1}{8}$ mile, and the line connecting them has a magnetic bearing of about N.N.E. $\frac{3}{4}$ E. These lights are like the preceding, except that the front light has a height of 34 feet instead of 44 feet above mean sea level. The approximate position is—Front Beacon, lat. 32° 5′ 12″ N., long. 81° 1′ 22″ W. The arc of visibility of all the above lights is 270°, ninety degrees of their circles of light being obscured by the structure to which they are fixed.

234.—UNITED STATES.—*New York.—Lighthouse at Latimer Reef, East End of Fisher Island Sound.*—On and after July 1, 1884, a *flashing white* light, flashing at intervals of 10 seconds, will be exhibited from the lighthouse recently constructed at Latimer reef, east end of Fisher island sound, New York. The apparatus lights 360° of the horizon, and the focal plane is 56 feet above mean low water, visible 13 miles. The structure is a white tower, standing on a red pier, and surmounted by a black lantern. The approximate position, as taken from the charts of the Coast Survey, is as follows :—Lat. 41° 18′ 10″ N., long. 71° 56′ W. Magnetic bearings and distances of prominent objects are approximately as follows :—Morgan's point lighthouse, N.W. by W. $\frac{3}{4}$ W., $2\frac{5}{8}$ miles ; Stonington lighthouse, N.E. $\frac{1}{4}$ E., 2 miles ; Watch hill lighthouse, E. $\frac{3}{4}$ S., $3\frac{3}{8}$ miles. A *fog-bell*, struck by machinery, will be sounded, giving one blow at intervals of 15 seconds, during thick and foggy weather. Upon the establishment of this light, the light-ship upon Eel Grass shoal will be discontinued.

235.—UNITED STATES.—*New York.—Lighthouse at Lamphere's Dock (Narrow Channel), Hudson River, N.Y.*—On and after May 24, 1884, a *fixed white* light will be exhibited from the structure recently erected at Lamphere's dock (narrow channel), Hudson river, New York. The light should be seen 10 miles. The structure is an hexagonal frame portable beacon, 11 feet high, on a brick foundation, one foot above the ground.

236.—UNITED STATES.—*Massachusetts.—Change of Position of Shovelful Shoal Lightship.*—On or about June 2, 1884, the position of the Shovelful shoal light-ship will be changed to a point about

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five-eighths of a mile N.E. ¾ E. from her present position. Magnetic bearings are approximately as follows:—Pollock Rip light-ship, E.S.E. ⅞ E.; Handkerchief light-ship, S.W. by W. ⅜ W.; Monomoy point light-house, N. ¾ W. All vessels should pass to the northward of the light-ship. Also, on or about the same date, a *black* buoy will be substituted for the buoy with red and black horizontal stripes which now marks the north end of Stone Horse shoal.

237.—Nova Scotia.—*Bay of Fundy.—East Coast.—Abbot Harbour.—Light on Abbot Island.*—A light is now exhibited from a mast on the southern extremity of Abbot island, to guide into Abbot harbour. It is a *fixed white* light, elevated 40 feet above high water, and visible from a distance of 8 miles. Position, lat. 43° 39½′ N., long. 65° 49½′ W. This light being chiefly for the use of fishermen frequenting the harbour, will be exhibited annually from about 1st May to about 1st October.

238.—Nova Scotia.—*Bay of Fundy.—Yarmouth Harbour.—Intended Fog-Signal at Bunker Island Lighthouse.*—It is intended during the year 1884, to establish a fog-signal at Bunker island lighthouse, Yarmouth harbour. The signal will be a bell, rung by machinery. Further Notice will be given.

239.—Nova Scotia.—*Basin of Mines.—Avon River.—Horton Bluff.—Permanent Light Re-exhibited.*—A light is now exhibited (in lieu of the pole light provisionally shown) from a lighthouse erected on the site of the lighthouse destroyed by fire in April, 1883, on Horton bluff, west bank of Avon river. It is, as heretofore, a *fixed white* light, elevated 100 feet above high water, and visible from a distance of 15 miles. The lighthouse, 33 feet high, constructed of wood and square in shape, is, with keeper's dwelling attached, painted white.

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## OUR OFFICIAL LOG.

OFFICIAL RETURN OF BRITISH WRECKS IN MAY, 1884.—The number and tonnage of British vessels respecting whose loss reports were received at the Board of Trade during the month of May, 1884, and the number of lives lost are as follow:—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing ..... | 60 | 16,433 | 214 |
| Steam ..... | 13 | 7,448 | 141 |
| Total ..... | 73 | 23,881 | 355 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in May, relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—THOMAS GRAY, Assistant-Secretary, Marine Department.—Board of Trade, 5th June, 1884.

THE Board of Trade have awarded a piece of plate to Captain Antonio Scotto di Monaco, master of the Italian barque *Carolina Fa'anga*, of Naples, in recognition of his humanity and kindness to the shipwrecked crew of the barque *Glenrosa*, of North Shields, whom he rescued from their sinking vessel at sea on the 23rd October last, and conveyed to Buenos Ayres. The Board have also awarded a binocular glass to Mr. Salvatore Guarracino, the mate of the *Carolina Falanga*, in recognition of his gallant conduct in taking command of a boat, and proceeding in a heavy sea to the rescue of the shipwrecked crew.

THE Board of Trade have received, through the Consul General for Sweden and Norway, a gold medal which has been awarded by his Majesty the King of Sweden and Norway to Mr. Alexander Mair, master of the British schooner *Norseman*, in recognition of his humane conduct towards the master and crew of the Swedish steamship *Atlantic*, which foundered in the Atlantic on the 5th December last.

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## Official Inquiries at Home, 1884.

2176. *Flying Foam*, ship; built at Quebec, 1863; owned by Mr. A. Cassels; tonnage, 1,284; Liverpool to Quebec; ballast; lost near Dundrum Bar, April 4, 1884, when loss of life ensued. Inquiry held at Liverpool, May 14, 1884, before Raffles, Judge; Castle and Vaux, N.A. Loss occasioned through having overrun her distance when making her westing, and no allowance being made for leeway, when brought to the wind and close-hauled.

2177. *Cornelis Wernard Eduard*, ship; built in Holland, 1865; owned by Mr. P. H. Cowley and others; tonnage, 784; Pensacola to United Kingdom; timber; supposed to have foundered at sea. Inquiry held at Liverpool, May 15, 1884, before Raffles, Judge; Murdoch and Moresby, N.A. In good and seaworthy condition when leaving Pensacola, and not overladen. No evidence as to cause of loss.

2180. *Elephant*, s.s.; built at Deptford, 1873; owned by Mr. J. E. Scott; tonnage, 215; London to Portsmouth; machinery and boilers; supposed to have foundered at sea. Inquiry held at Westminster, May 14, 1884; before Rothery, Wreck Commissioner; Methven, Parish and Robinson, N.A. In seaworthy condition at the time of going to sea, as far as hull and equipment were concerned; but she was overladen, unstable, and her main hatchway was uncovered; her deck was so hampered that it was impossible for the crew to properly work the ship, and she probably foundered in the gale which she must have encountered after passing Dungeness. Owner was deemed responsible for this state of things.

2181. *Memphis*, barque; built at St. John, N.B., 1856; owned by Mr. J. Robinson, the master; tonnage, 327; Grimsby to Stockholm; coals; lost on the Island of Bornholm, April 17, 1884. Inquiry held at Hull, May 21, 1884; before Twiss, Judge; Ward and Comyn, N.A. Loss due to the master endeavouring to weather the northern part of the island, instead of running to the southward of it, and to the vessel missing stays when close in shore.

2182. *Kate Sancton*, barque, built in Nova Scotia; owned by Mr. S. Schofield; tonnage, 677; Liverpool to Picton, N.S.; ballast; lost near Seascole, Cumberland, May 4, 1884. Inquiry held at Liverpool, May 24, 1884, before Raffles, Judge; Beasley and

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Kennedy, N.A. Casualty caused by the chain parting. Master in default for letting go one anchor only, being well aware that he was on a lee shore, and a heavy gale blowing. Certificate suspended for six months.

2184. *Lady Dalhousie*, s.s. ; built at Low Walker, 1881 ; owned by Lady Dalhousie Steamship Company, Limited ; tonnage, 1,291 ; London to Newport (Mon.) ; water ballast ; lost on Manacles Rocks, April 12, 1884. Inquiry held at Westminster, May 23, 1884, before Rothery, Wreck Commissioner ; Forster and Pattison, N.A. The person in charge as pilot and second mate to blame for steering too northerly a course whereby she entered Falmouth Bay, and in getting to sea again struck on the Manacles, through having been steered too westerly a course. Master also to blame for leaving navigation wholly in charge of acting pilot. Certificate not dealt with.

2187. *Peace*, coble ; *General Havelock*, s.s. The former on a fishing cruise ; the latter built at Sunderland, 1868 ; owned by Mr. R. M. Hudson and others ; tonnage, 439 ; London to Sunderland ; passengers and general cargo. In collision off Runswick, Yorks, April 24, 1884, when the coble was sunk and two lives were lost. Inquiry held at Westminster, May 29, 1884, before Rothery, Wreck Commissioner ; Powell, Harland and Anderson, N.A. Casualty due to negligent navigation on board the steamship, for which master and chief officer were responsible. Certificates suspended for six and three months respectively.

2189. *Louvain*, s.s. ; built at North Shields, 1881 ; owned by Mr. R. Mills, junr. ; tonnage, 162 ; Warkworth to Nieuport, Belgium ; coals ; damaged whilst at sea by the crowns of the furnaces falling in. Inquiry held at Westminster, May 31, 1884, before Rothery, Wreck Commissioner ; Curling, Ronaldson and Hallett, N.A. Casualty caused by the water in the boilers being allowed to get too low, through the ignorance or negligence of the persons in charge ; chief engineer free from blame.

2193. *Harry Blackwood*, brig ; built at Prince Edward's Island, 1878 ; owned by Mr. J. Bevan and others ; tonnage 232 ; Hamburg to United Kingdom ; general cargo ; lost on the Kentish Knock Sands, April 22, 1884. Inquiry held at Swansea, June 4, 1884, before Fowler, Judge ; Hyde and Davies, N.A. Master in

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default for neglecting to verify his position after sighting the light on Long Sand by taking cross bearings of the Galloper and Sunk lights. Certificate suspended for three months, recommended for one as mate.

2194. *Hesperus*, s.s.; built at Sunderland, 1871; owned by Mr. F. Good and others; tonnage, 558; Iggesund Bottima to Hull; iron and deals; lost on Market Rocks, Aland Sea, April 27, 1884. Inquiry held at Hull, June 5, 1884, before Twiss, Judge; Parish and Castle, N.A. Master in default in underestimating the distance run, and in taking no steps to verify his position. Mate also to blame.

2195. *Hornet*, s.s.; built at Port Glasgow, 1874; owned by Mr. W. Pearce; tonnage, 348; Newport (Mon.) to Cardiff; coals; foundered in the Bristol Channel, January 27, 1884, when 7 lives were lost. Inquiry held at Westminster, May 26, 1884; before Rothery, Wreck Commissioner; Lang, E.A., and Moresby, N.A. In seaworthy condition when leaving Newport. Casualty due to some inexperienced person opening the sea cock of the pulsometer, as well as the valve of the pipe leading to the tank, thus allowing the vessel to fill and go down.

2196. *Illyrian*, s.s.; owned by Steamship "Illyrian" Company, Limited; tonnage, 1,955; Liverpool to Boston; general cargo and passengers; lost on Cape Clear Island, May 15, 1884. Inquiry held at Liverpool, June 6, 1884; before Raffles, Judge; Hight and Methven, N.A. Loss caused by vessel having got off her course when approachiag Fastnet Rock. Master censured.

2197. *Aspirant*, barque; built at South Shields, 1866; owned by Mr. D. Stonehouse; tonnage, 361; the Tyne to Aspinwall; coals; lost on Ower Bank, May 7, 1884. Inquiry held at North Shields, May 31, 1884, before Cleugh and Green, Justices; Parfitt and Wilson, N.A. Evidence inconclusive as to cause of loss. Master's certificate not dealt with

2198. *Charles Oscar*, fishing smack; built at Winteringham Haven, 1877; owned by Mr. C. T. Crowther; tonnage, 73; on a fishing cruise; lost on Horn Reef, May 8, 1884. Inquiry held at Hull, June 9, 1884, before Twiss, Judge; Comyn and Vaux, N.A. Master in default for keeping vessel too long on one tack, heading for shore, and making no allowance for action of tide. Certificate suspended three months.

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2199. *Gothenburg City*, s.s.; built at Hartlepool, 1884; owned by Mr. C. Furness and others; tonnage, 1,657; West Hartlepool to Stockholm; ballast; stranded on Hammaruda Reef, Gottland, May 4, 1884. Inquiry held at Middlesborough, June 9, 1884, before Coleman, Judge; Ward and Kennedy, N.A. Stranding caused by courses set not being made good.

2200. *Hesleden*, s.s.; built at West Hartlepool, 1876; owned by Mr. R. Ropner and others; tonnage, 975; Sulina to Cork; maize; stranded near old Head of Kinsale, May 9, 1884. Inquiry held at Middlesborough, June, 6, 1884; before Coleman, Judge; French and Murdoch, N.A. Stranded through proceeding in a dense fog, when position of ship was doubtful. Master reprimanded.

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OFFICIAL INQUIRIES ABROAD, 1883-4.

2178. *Burwah*, s.s., and *Yaralla*, s.s.; in collision near Steward's Island Flats, Great Sandy Straits, November 17, 1883. Inquiry held at Brisbane, January 4, 1884. Evidence very conflicting; no decision arrived at.

2179. *Victoria*, s.s., and *Keilawarra*, s.s.; in collision in Brisbane River, December 18, 1883. Inquiry held at Brisbane, December 29, 1883. Accident due to *Keilawarra* reversing her engines and paying off to port; had she retained her headway, collision might have been avoided.

2183. *J. C. Robertson*, ship; lost near Valparaiso, March 30, 1884. Naval Court held at Valparaiso, April 5, 1884; master free from blame.

2185. *Ravenscliffe*, barque; lost on Green Turtle Cay Reef, February 27, 1884. Inquiry held at the Bahamas. Loss due to error of chronometer.

2186. *R. W. Griffiths*, barque; lost on Labanderas Shoal, April 2, 1884. Inquiry held at the Bahamas. Loss occasioned by thick weather.

2188. *M. A. Evans*, barque; capsized in the Boca del Riachuelo, Buenos Ayres. Naval Court held at Buenos Ayres, April 19, 1884. Accident caused by the inequality of the bottom in the berth to which the barque was ordered.

2190. *Sir Jamsetjee Family*, barque; struck on Otway Reef, February 21, 1884. Inquiry held at Melbourne, March 5, 1884.

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Casualty due to master standing in too close to reef for purpose of signalling. Master censured.

2191. *Florence Elliott*, ketch; stranded at the River Cam, March 4, 1884. Inquiry held at Melbourne, March 25, 1884. No blame attached to master.

2192. *Hoselaw*, s.s.; lost on Island of Gothland, April 28, 1884. Naval Court held at Stockholm. Casualty occurred in thick weather. Second mate in default for neglecting to call the master or to reduce speed. Certificate suspended for three months.

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ICELAND.—*Magnetic observations.*—The following magnetic observations were made on board the French cruiser *Allier*, in Iceland, in 1888:—

*Observations on shore.*—It is known that near the coast of Iceland the indications of the compass are often erroneous, and that in certain places, notably in the neighbourhood of Skruden Island and of Mount Sneefields, and generally in the interior of all the fiords, these errors are sometimes as great as 20° and 30°.

It follows, then, that observations on shore can only be useful in determining the changes in variation at any one place. Observations of this kind were made, during the course of a month, at Reikiavik and at Faskrud fiord by means of a registering apparatus, and the conclusion was reached that the north end of the needle attained its extreme westerly position at about 1h. 30m. p.m. and its extreme easterly position at about 5h. 30m. a.m. The mean amplitude of this oscillation is but 21′; but in certain exceptional cases, and for causes impossible to determine, the distance between the east and west extremes was nearly 3° 30′.

*Observations at sea* enable us to conclude that generally the influence of the land ceases to be felt at a distance of five or six miles to seaward, but in certain places, *i.e.*, in the vicinity of Mount Sneefields, in Thorbak Bay, off Cape Reikianoes, the Westman Islands, and particularly on that part of the east coast comprised between the islands of Papey, Skruden, and Hvalsbak, the influence of the land extended as far as 20 and 30 miles to seaward.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. VIII.

AUGUST, 1884.

## HARBOURS OF REFUGE.

IT is not surprising that considerable diversity of opinion should exist with respect to the extent to which the State may fairly be called upon to assist in providing harbour accommodation upon lines of coast where the harbours are at present either defective or insufficient. The subject involves the questions of national defence and the safety of human life, as well as that of local interests, and as regards the former it may reasonably be urged that they fall within the legitimate sphere of State obligations. Indeed, so far as the first consideration is concerned there is clearly no room for doubt, the defence of the country being unquestionably a matter to be provided for by the community at large. And with respect to the question of safety, it is not difficult to bring forward evidence tending to show that public money might be spent with much advantage upon such works. The great loss of life and property taking place every year upon the coasts of the United Kingdom, the terrible havoc made from time to time by winter gales among the vessels employed in the North Sea fishing trade, and



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the long stretches of coast now unprovided with satisfactory harbours, are all strong points in favour of the policy here referred to.

From Cromarty Firth to the Firth of Forth, and from the Forth to the Humber, there is at present no harbour which can be entered at low water by vessels in distress; and at high water, in many cases the entry in bad weather is an operation of great danger and difficulty. Even the Humber is not all that could be desired in this respect, the entry being far from easy for sailing vessels during a strong ebb tide. The Wreck Chart shows its worst record for the portion of the English coast lying between the Thames and the Tyne, owing to the large number of coasters and fishing vessels employed in the North Sea, and there is no doubt that a considerable reduction would be made in the number of lives lost in this quarter if all the more important harbours now in use could be entered at any state of the tide or weather.

The spectacle presented off one of our east coast ports during a heavy gale which may have suddenly sprung up, when a large number of vessels are beating about until there is sufficient water to enable them to cross the bar, or perhaps being driven ashore in attempting to make the narrow entrance, is well calculated to give rise to the reflection that the Government would hardly find a more legitimate object upon which to expend the public funds than in helping to provide more suitable accommodation at such points. And it may be urged that by so doing they would improve the means of national defence, as well as help to reduce the great loss of life that now takes place, owing to the defective condition of many of our south and east coast harbours. Between Portsmouth and Sheerness there is at present no haven in which a man-of-war could coal in safety, while the east coast is altogether unprovided with any port or place that could be used as a rendezvous by our fleet or defended against a naval attack. It is evident, therefore, that there are good grounds why the proposal to construct improved harbours at the national cost should not be lightly dismissed. In fact the desirability of having an improvement made in the direction here indicated must be evident to any man who gives the subject a moment's considera-

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tion; and it is only when the means proposed for supplying the existing deficiencies are examined that doubts and difficulties arise.

It may be well to remark that we here propose to glance at the question solely in its relation to the subject of the safety of human life, this being the issue on which the Government have usually been urged to loosen the national purse strings for the purpose of aiding any particular localities. The defence of the country may be a matter of equal or even greater importance, but it is clearly not one that affects the special interest of any given port or line of coast, and may therefore be left on one side. It may be remarked, however, in passing, that as the tendency of marine fortifications at any point must be to invite naval attack, their presence may be regarded as a very doubtful advantage to any trading centre. If the town of Odessa, for example, had been strongly fortified at the time of the Crimean war it would probably have been destroyed; whereas, being entirely open and undefended, it escaped the hostile attention of the allies.

So far as relates to the question of providing a refuge for vessels in bad weather, it is extremely difficult to decide at what point a first-class harbour would be most effective in reducing loss of life. It may be an easy matter to point out the locality in the Wreck Chart where the black marks indicating fatal casualties are thickest, and to take it for granted that this would be the best place in which a harbour of refuge could be constructed. But such an inference might be altogether fallacious. The vessels standing most in need of a refuge are those engaged in the fishing trade; but the skipper of one of these, even when seeking shelter from bad weather, must not lose sight of the main chance. A smack, laden with fish, and bound for Hull or Grimsby would not run to a harbour or refuge at Filey, to be there weather-bound for perhaps two or three days, if there seemed to be any possibility of making the Humber. The Committee appointed in 1882 to inquire into the employment of convicts, in recommending Filey as the most suitable point on the north-east coast for the construction of improved harbour works, suggested that a first-class harbour there might have the effect of removing the centres of the fishing trade from Yarmouth, Lowestoft, Grimsby, and Hull, and of concentrating them at Filey.



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Of this, however, they seemed to be in some doubt on looking to the large amount of capital embarked in the fishing trade at these places. And certainly their doubts in this respect are fully justified. It may be that Filey is well situated with regard to the great fishing ground of the North Sea, but at the same time it is very unlikely that it will become a serious rival of the ports just mentioned. The capital invested in the large docks and warehouses at the old established ports would not be sacrificed without a vigorous contest, and the projectors of similar works at Filey would find it no easy matter to draw the trade from its present head-quarters. It is true that sailing vessels experience some difficulty in entering the Humber against the full ebb tide, except with a favourable wind; but it must be remembered that a large proportion of the fish taken in the North Sea is now conveyed ashore from the smacks by steamers, and that for these a harbour of refuge at Filey would be a matter of little importance. It is probable, therefore, that such a harbour would not exert any appreciable influence upon the present fishing ports, and that it would be used only as a refuge in gales of exceptional severity. It is easy, however, to over-estimate its value even as a place of shelter, since it must be remembered that some of the most fatal series of losses among the North Sea fishing fleet in recent times have been those caused by gales which sprung up suddenly, with but slight warning, and wrecked the boats before they had time to make for shore.

Doubtless it is the risk of interference with vested interests which causes the proposals for the construction of harbours of refuge to be coldly received in many quarters. There are no ports where the offer of national assistance in the construction of improved harbour accommodation would not be welcomed, but this spirit does not usually extend beyond the limits of any particular port. Further than this it becomes transformed into a feeling more or less mixed with jealousy; and hence it is that many persons whose interests are at stake have come to the conclusion that the State would do well to leave the question alone altogether. It is evident that, if the Government were to reverse the policy they have hitherto adopted, and to undertake works of this kind at the national cost, they would find themselves involved in endless

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embarrassments and difficulties, owing to the number and conflicting nature of the claims they would have to consider. Every kind of pressure would be brought to bear for the purpose of influencing their decisions; and there would be a serious risk that the real object to be attained might become obscured by the various prejudices that would be aroused. Moreover, apart from any practical benefits that might be secured, the adoption of such a course would at once begin to exert an evil influence by placing a serious check on local enterprise in every place where there seemed a reasonable chance of securing public assistance. It is not likely that any port would burden itself with a debt for the construction of harbour works so long as there seemed to be a prospect of receiving aid from the Government: and in this way the most necessary improvements might be delayed for years. Like a man who neglects to push his own way in the world through living in the prospect of succeeding to some great inheritance, and to whom the "wished for comes too late," or perhaps not at all, the interests of a port might be seriously injured while the local authorities were wasting time in vainly attempting to obtain help from the national exchequer.

In addition to these considerations there is also the question of economy to be borne in mind. There is every reason to believe that the cost of works of this kind would be much heavier if it were to be borne by the nation than if it became a charge upon the locality. In the cases of Alderney and Dover the Government have had some unfortunate experience of the difficulty of keeping the expenditure on harbour works within the limits originally laid down. The estimated cost of the Dover scheme was £245,000, while the actual outlay has been something like £700,000; at Alderney the estimate was £620,000, and the cost £1,270,000. Of course, the works of these places were not primarily undertaken for the purpose of providing harbours of refuge: but they may be taken as useful illustrations of the difference that usually arises between the estimated and the actual cost of Government undertakings. The persons employed to frame estimates of this class are often interested in keeping them within moderate bounds; but when the limits they have defined have been reached and the work is found to be only

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half finished the State finds itself in a helpless position. It cannot abandon the scheme in an incomplete condition. The end must be reached at any cost, even if, as in the case of the Alderney breakwater, it is only to find that all the money expended might as well have been poured into the sea.

There is in many quarters a strong impression that the Government are in a position to construct harbour works at something like a nominal cost by employing the convict labour which is always at its disposal. Unfortunately, this is by no means the case. As regards the efficiency of convict, as compared with free, labour, it is asserted, by competent authorities, that three convicts are about equal to two ordinary day labourers. But Sir J. Coode, C.E., gives a somewhat lower estimate, stating that only fifty per cent. of a free workman's labour was got from each convict at Portland, even under the most favourable circumstances. Formerly, the amount was only forty per cent. The relative inefficiency of convict labour itself is, however, a matter of only minor importance. It is the cost of the establishment involved in the employment of prisoners upon public works, which counterbalances the chief portion of the advantage to be gained from their unpaid labour. Twenty-five per cent. of the total cost of any undertaking is the most favourable estimate of the saving to be effected by using prison labour; while Sir J. Coode, whose opinion upon the subject is entitled to great weight, thinks that fifteen per cent. is the maximum of the economy to be effected in this way. Of course the possibility of effecting a saving, even to this extent, is an important consideration, and is one to which the attention of the Government and of the local authorities should be carefully directed. There is always a large amount of convict labour to be disposed of; and it is desirable that wherever possible, it should be turned to useful account, instead of being frittered away as so much of it now is upon objects of no practical value. It is only upon works of an extensive character, however, that this kind of labour can be used to any advantage, the charges for buildings and guards being much smaller in proportion for many than for few prisoners.

It is in connection with the question of finding suitable employ-

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ment for convicts that the Government have decided to extend the harbour works at Dover, and to commence operations upon similar undertakings at Filey and Peterhead. It is proposed to construct a pier and breakwater at Dover, at a cost of £790,000, exclusive of prison charges, and it is estimated that this work will employ 900 convicts for twelve years. In the case of Filey, the estimate is £1,250,000, and 750 convicts to be employed for a similar period. It is also proposed to construct a new harbour at Peterhead, at a cost of £250,000, and to employ from 500 to 600 convicts upon the work. Past experience has shown that not much reliance can be placed on estimates of this class, and the result in these cases will probably be very different to what is now anticipated. But this is a detail with which we are not here concerned. As the Government have to find employment for a large amount of prison labour, owing to the completion of the breakwater at Portland and the great basins at Chatham, the works above referred to are among the most suitable which they could take in hand. These must, however, be regarded as works of national defence as well as harbours for the accommodation of merchant ships. The decisions arrived at with respect to them does not in any way affect the principle that the construction of suitable harbours in ordinary cases is not a matter which the nation can be expected to undertake. Indeed the reasons against such a course appear to us to be unanswerable. There is an absolute certainty that the outlay would not be kept within moderate limits; there is the grave difficulty in which the Government would be placed in attempting to fairly weigh the various conflicting claims that would be made upon them; there is the deadening influence such a policy must exert upon local enterprise; and lastly there is the risk that when some great scheme had been carried into effect, it would, as in the case of the breakwater at Alderney, prove to be of no practical value. The best judges of local requirements are those whose interests are involved, and the best safeguard against embarking upon useless undertakings is that those who advise expenditure shall also have a share in the business of providing the necessary means.

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## BAROMETER MANUAL FOR THE USE OF SEAMEN.

ISSUED BY THE AUTHORITY OF THE METEOROLOGICAL COUNCIL.

THE first part of this pamphlet deals with the barometer and the method of using it. Under this head it gives the connection of changes of barometric pressure with changes of weather, and the influence of temperature on barometric pressure. The work contains charts showing the distribution of mean barometer readings and gives a description of the variations of pressure, both periodical and non-periodical. Attention is also given to the causes which determine the force and direction of the wind, and to the prevailing winds at various seasons over different parts of the globe.

The latter part contains matter of the highest value to seamen, and we have made a detailed abstract of this part of the work giving the principal points of value, and in so doing have kept as nearly as possible to the words of the original. The space at our disposal, however, has prevented these chapters being given in their complete form.

### WINDS AND STORMS OF THE TEMPERATE ZONES.

#### WINDS OF THE ATLANTIC OCEAN, WHICH ARE TYPICAL OF THOSE OF OTHER SEAS.

The Atlantic Ocean will supply types of the winds usually met with in other seas. An area of high pressure occurs in the North Atlantic between the parallels of 30° and 40° north, and according to Buys Ballot's law, the wind draws round it, being northerly on its eastern, easterly on its southern, southerly on its western, and westerly on its northern side.

A seaman, therefore, outward bound from England, say, to the Cape of Good Hope, passes from the north-east to the east and south-east side of an area of high pressure lying to the westward of him, and as he approaches the coast of Portugal, the wind very generally comes from north-west, gradually shifting to north and north-east as he proceeds to the southward.

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On the other hand, when a homeward-bound ship approaches the northern verge of the N.E. Trades, she finds that the wind draws to the eastward, with a rising barometer. As the area of highest pressure is reached the barometer ceases to rise, and the wind dies away. These are the dreaded "calms," or, as Maury calls them, "Doldrums of Cancer." There being no difference of pressure there is no wind, and these calms coincide with a large area of high and even pressure, where a ship will experience little or no wind until she has crept to a part of the sea where the pressure commences to decrease.

If, as occasionally happens, it is found that the N.E. Trade gradually turns into a S.E., S., and S.W. wind, it will be understood, from what has already been said, that a vessel experiencing these changes has passed round the S.W., W., and N.W. sides of this area of high pressure, thereby avoiding the region of calms altogether.

There is a similar area of high pressure in the South Atlantic, with a corresponding circulation of the wind round it.

The homeward-bound ship, after rounding the Cape of Good Hope, is at the polar edge of the S.E. Trade on the eastern side of the South Atlantic, just as the outward-bound ship is at the polar edge of the N.E. Trade when off the coast of Portugal, and the first wind she experiences is from S.W., changing to S. and S.E. as she proceeds to the northward, which (according to Buys Ballot's law, when applied to the southern hemisphere), shows that she has passed along the S.E., E., and N.E. sides of an area of high pressure.

Again, the outward-bound ship, as she draws towards the southern verge of the S.E. Trades on the western side of the South Atlantic, very generally experiences changes of wind to N.E., N., and N.W., which are the winds met with in the southern hemisphere on the N.W., W., and S.W. sides of an area of high pressure, corresponding to the winds already noticed as being experienced on the western side of the North Atlantic.

Areas of high barometrical pressure occur in many other parts of the ocean, similar to those of the Atlantic, and corresponding winds circulate round them.

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### Cyclonic Gales of the Temperate Zones.

The great currents of the atmosphere, which give rise to the prevailing winds, are thus seen to be regulated by the positions of the permanent areas of high and low pressure, and in these currents, subsidiary areas of low pressure make their appearance, and are carried along with them, and these travelling areas frequently give rise to gales.

In the Temperate Zone of the North Atlantic these gales, which almost invariably travel to the eastward with the prevailing atmospheric current from the west, generally commence at S. and end at W. or N.W., with little or no E. wind. The probable reason of this is that the areas of low pressure to which they are related have steep gradients only on their E., S.E., S., and S.W. sides, there being little or no difference of pressure between their centre and the more permanent depression which lies to the north of them.

The ordinary gales of high southern latitudes are similar in character to those of the northern hemisphere. They also accompany areas of low pressure travelling to the eastward, and considering that an equatorial wind is here north instead of south, the winds are similar, for they commence at N., and end at W. or S.W., with little or no easterly wind, probably because the pressure to the S. is so much lower than that to the N. of the tract in which they occur.

The cyclonic storms of the Temperate Zones do not often present the phenomena of a central calm, with the winds blowing from nearly opposite directions on each side of it. There is, therefore, not so much risk of being taken aback as in the tropical cyclones; but it is advisable for a captain to know on which tack it will be safest to lie-to if obliged to do so, and this will be the same as that for the cyclones of the respective hemispheres.

The most serious sudden shift of wind which is to be expected in these storms is that from south-west to north-west in the northern hemisphere, or from north-west to south-west in the southern. This is generally accompanied by heavy rain or hail, with thunder and lightning, while the temperature falls several degrees with the

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first blast of north-west or south-west wind, as the case may be, according to the hemisphere.

In considering how to act in such circumstances, there are two matters to which the seaman's attention should be directed, as they seriously affect the conclusions he should draw from his barometer readings.

*The first* is that on the one tack his barometer has a tendency to rise, on the other it has a tendency to fall. The tack of rising barometer is the starboard in the northern, the port in the southern hemisphere. This may be explained as follows :—

According to Buys Ballot's Law, in the northern hemisphere the lower barometer is on your left when your back is turned to the wind, and as when you are thus placed a ship on the starboard-tack is advancing towards your right, she goes towards the higher barometer and recedes from the lower. In the southern hemisphere this is reversed, and the ship on the port-tack advances towards the higher and leaves the lower barometer.

But this rule will only be strictly applicable so long as no change takes place in the barometric pressure, and it may so happen that a high pressure towards which the ship is going may be receding from her faster than she sails, and a lower pressure may be coming up astern and overtaking her; or it may be that a lower pressure towards which the ship is sailing may be moving away faster than she sails. Still the influence of the tack must always be felt, and on the whole it may be said that in the northern hemisphere, a rising barometer on the starboard-tack is not sufficient indication of improving weather, and other signs should be looked for before trusting it. In all cases for the northern hemisphere a rising barometer on the port-tack is a valuable indication of improving weather, while a falling barometer on the starboard-tack is an important warning in the other direction. This order is reversed in the southern hemisphere.

*The second* point to consider is the relation which the course and speed of the ship bear to the tracks and progress of the areas of low barometric pressure and their corresponding wind-systems, in parts of the sea where the general tracks of storms are known. This will be easily done by taking, as an illustration, the case of

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a steamer traversing the North Atlantic between England and America, where storms generally move in an easterly direction.

If a storm is advancing eastwards at the rate of, say, twenty miles an hour, and if the ship is steaming at the average rate of, say, ten miles an hour, the result will be that when going westward the ship will have a relative rate of motion towards the storm of thirty miles an hour, but when going eastward, of only ten miles an hour.

In other words, ships when outward bound across the Atlantic meet the advancing storm systems, which commonly travel from west to east, and when homeward bound run with them, consequently the rapidity with which the barometer falls or rises and the wind shifts is proportionately greater in the former case than in the latter.

### Gales of the North Temperate Zone.

The ordinary gales of the north Temperate Zone commence at S.E. or S. and end at W. or N.W. If a ship in these latitudes experiences a fresh S. or S.E. wind, with a relatively high temperature and falling barometer, Buys Ballot's law shows that there is an area of low pressure to the W. or S.W. of her; and it is probably travelling to the E. or N.E. Experience shows that whether the ship be hove-to or stands to the westward, the barometer will fall until the wind shifts to the westward (which generally happens during a heavy shower of rain, together with a sudden fall of temperature), when the barometer will probably rise as fast as it previously fell, and a strong N.W. wind will set in.

From what has been said it will be clear to the navigator that in northern latitudes, at the setting in of a southerly wind, a sailing ship as well as a steamer bound to the westward will, by her course and speed, cause the barometer to fall quicker than if she hove-to or stood to the eastward, so that in this case also the state of the sea and other appearances ought to be considered, or her captain may be led to anticipate worse weather than is really coming.

With a southerly wind and falling barometer, a ship bound to the westward might gain by running to the northward with the object of causing the wind to back to the eastward, but the type

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of gale in which this is possible resembles a cyclone, and does not represent the ordinary gales of these latitudes which begin at S. and end at W. or N.W. Again, it might be possible for a ship, with the first of the southerly wind which exists on the east side of the area of low pressure, to get less wind by running to the north, but as the extent in latitude of the cyclone area is not known, and as there is no certainty that she would get into more moderate weather by doing so, she might do herself more harm than good.

It seems, then, probable that a ship bound to the southward or westward must face one of these gales if she meets it. A weak ship, whose object is to stem the sea and get safely through, without considering progress, should lie-to on the starboard-tack, as the wind generally shifts from S. to S.W., W. and N.W. This would of course be the best plan for any ship which found the gale too heavy for her. But a well-conditioned ship, bound to the westward, may keep on the port-tack until the wind shifts to west with a rising barometer, and then tack to the south-westward. This plan would, of course, tend to bring her into the trough of the sea, and she would be more likely to be caught aback as the wind changed, but we are assuming that her captain will be prepared to meet these risks.

When the wind has shifted to N.W. the starboard-tack takes her away from the centre of such a disturbance, though she may soon sail into the southerly wind of the eastern side of another low-pressure-area coming towards her. This would be a very common occurrence in winter.

### Gales of the South Temperate Zone.

The prevailing gales of high southern latitudes resemble those of northern, and in describing them it is only requisite to remember that *there* north and south change places. For instance, as a ship bound to Australia gets into 40° S., "the Roaring Forties," she experiences a series of gales which, commencing at N. or N.E., end at W. or S.W. Now with a northerly wind in the southern hemisphere there is a low pressure to the westward, and the way in which the wind usually changes proves that those areas of low

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pressure are also travelling to the eastward. Ships which keep a steady westerly wind for days as they run to the eastward in high southern latitudes, are probably keeping company with one of these areas of low pressure, and if they had hove-to or commenced beating to the westward they also would have experienced many changes just in the same manner as our steamers bound *to* America do, whilst those *from* America frequently keep a steady barometer and westerly wind for days. This receives abundant confirmation from the frequency of the barometrical oscillations, and changes of wind, experienced by ships bound to the westward, in rounding either the Cape of Good Hope or Cape Horn.

The best method for dealing with a heavy gale, or with a weak ship in an ordinary gale, is reversed for high southern latitudes: there the port is the "coming up" tack, which enables her to stem the sea, as the wind usually shifts from N. by N.W. to S.W., and the port-tack with a S.W. wind takes her away from the low pressure to which the wind is related, though of course it may, and in the winter months most probably will, soon take her into the northerly wind of the eastern side of another low pressure coming towards her.

For a ship beating to the westward, of course the best progress is made by keeping on the starboard-tack with the wind N. and N.W. until it shifts to W. and S.W., when she ought to tack to the north-westward; but it will be seen that, as in the best method for making progress to the westward in high northern latitudes, the ship will be headed off, and get into the trough of the sea; she will also be more liable to be taken aback, as the wind changes, than if she were on the port-tack.

## TROPICAL STORMS.

### Hurricanes, Typhoons, or Cyclones of Tropical Seas.

Of all atmospheric disturbances, of the approach of which the barometer can supply indications, and the dangers of which it may enable the seaman to avoid, by giving him warning of their proximity and position, the most serious are the revolving storms of the tropics.

These storms, all of which may be properly termed cyclones,

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occur in the three great oceans, the Atlantic, Pacific, and Indian Oceans; but they are seldom experienced within 5° or 6° of the Equator, and have not been traced into very high latitudes. They appear to be most frequent and most severe in the West Indies, in the vicinity of Mauritius, in the Bay of Bengal, and in the China Seas; and in these seas they are most prevalent during the months following the summer solstice, or in other words, from July to October, in the northern hemisphere, and in the southern from December to April. In the Arabian Sea and in the Bay of Bengal cyclones occur most frequently from April to June, and in October, November, and the beginning of December.* They are commonly known as hurricanes in the West Indies; cyclones in the Indian Ocean; and typhoons in the China Seas.

The space over which these storms have been known to expand themselves varies from twenty or thirty miles to some hundreds of miles in diameter; the wind blowing with an ever varying force, now lulling into little more than a strong breeze, and as the centre is approached often rising into a blast of irresistible fury.

It is an invariable characteristic of their revolution, that the gyration of the storm field takes place in one direction; in the northern hemisphere in the opposite direction to the hands of a watch, and in the southern hemisphere with the hands of a watch. The knowledge of this law is the more important, as it not only supplies the seaman with direct means of distinguishing these storms from gales in which the direction of the wind varies little if at all, but it reveals to him the position of the centre or vortex with respect to the place of his vessel, and therefore points out the way to avoid it,

* TABLE of recorded HURRICANES, CYCLONES, and TYPHOONS, in various parts of the world.

| | Jan. | Feb. | March. | April. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | TOTAL. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| West Indies, 300 years ..... | 5 | 7 | 11 | 6 | 5 | 10 | 42 | 96 | 80 | 69 | 17 | 7 | 355 |
| South Indian Ocean (39 years, 1809 to 1848) ..... | 9 | 18 | 10 | 8 | 4 | — | — | — | 1 | 1 | 4 | 3 | 58 |
| Bombay, 25 years..... | 1 | 1 | 1 | 5 | 9 | 2 | 4 | 5 | 8 | 12 | 9 | 5 | 62 |
| Bay of Bengal, 120 years .... | 2 | — | 2 | 9 | 21 | 10 | 8 | 4 | 6 | 31 | 18 | 9 | 115 |
| China Sea, 35 years..... | 5 | 1 | 5 | 5 | 11 | 10 | 22 | 40 | 58 | 35 | 16 | 6 | 214 |

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and so to escape from the region of greatest danger, where the fury of the wind is most extreme, the changes of its direction most sudden and the sea most to be dreaded.

In the Atlantic and South Indian Ocean these storms commence to the eastward; for some days they travel along a path not exactly west, but inclining a point or two towards the pole of that hemisphere which they are crossing; and as they advance they seem more inclined to curve away from the equator. When they reach the 25th degree of latitude, they generally curve still more, until they move to the N.E. in the northern hemisphere, and to the S.E. in the southern hemisphere. The Atlantic storms almost always wheel round to the northward in the Mexican Gulf, or in its vicinity, and follow the sea-board of North America.

The cyclones of the Bay of Bengal appear to originate near the Andaman Islands, those of the Arabian Sea near the Lacadives. These generally travel to the westward and north-westward, the former sometimes crossing the Indian Peninsula, sometimes passing off over Bengal, and curving back to the eastward. The typhoons of the China Seas commonly take a westerly or north-westerly course.

The rate of movement of these storms, though variable, may be averaged at 300 miles a day in the West Indies; in the Arabian Sea, in the Bay of Bengal, and in the China Sea, 200 miles a day; whilst in the Southern Indian Ocean their rates vary from fifty to 200 miles a day.

The indications of the approach of a revolving storm are the usual ugly and threatening appearance of the weather which forebodes most storms, and the increasing number and severity of the gusts with the rising of the wind. These signs are in some cases preceded by a long heavy swell and confused sea, which comes from the direction in which the storm is approaching, and travels more rapidly than the storm centre.

The best and surest of all warnings, however, will be found in the barometer. In every case there is great barometric disturbance, the barometer at the centres of some of the storms standing fully two inches lower than outside the storm field. Accordingly if the barometer falls rapidly, or even if the regularity

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of its diurnal variation be interrupted, danger may be apprehended.

The first care of the master of a vessel caught in a cyclone will be to find how the centre bears from him. In the northern hemisphere let him, facing the wind, take eight points to the right of the direction of the wind, and that will be the approximate bearing of the centre; in the southern hemisphere take eight points to the left. Thus, in the northern hemisphere with the wind from N.E., the centre will bear S.E., and in the southern hemisphere with the wind from N.W., the centre will bear S.W.

In the present discussion, the motion of the wind in a cyclone will, for the sake of simplicity, be treated as approximately circular. But this is not strictly the case, and there is evidence to show that frequently in some parts of the storm-field there is more or less indraft. At a considerable distance from the centre, and before the barometer shall have fallen much below its normal value, the centre may bear 10 or 12 points from the direction of the wind (reckoned to the right or left according to the hemisphere); but after *the barometer has fallen five or six-tenths of an inch* it is probable that the wind then blowing forms part of the central storm circle, and the bearing of the centre may be taken as eight points from the direction of the wind.

It was said that the master's first care will be to know how the centre bears. His next care will be to know on which side of the storm's path his vessel is situated, and the direction in which the storm is moving. In the northern hemisphere if she be situated on the right-hand side or semicircle of a storm travelling to the westward—looking in the direction to which the storm is travelling—the wind will veer N.E., E., S.E., S., &c., or with the hands of a watch; on the left-hand side the wind will back N., N.W., W., &c., or against the hands of a watch.

Similarly, in the southern hemisphere, if the vessel be in the right-hand semicircle of a storm travelling to the westward,—looking in the direction to which the storm is moving—the wind will veer S., S.W., W., &c., or with the hands of a watch; in the left-hand semicircle it will back S.E., E., N.E., N., &c., or against the hands of a watch.



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In speaking of the shift of wind such a shift is meant as would be observed on a vessel hove-to; for if the vessel be moving faster than the storm, and in the same direction, the shift may be in the opposite direction to what has been stated.

If while the vessel is hove-to the wind be found to remain in the same direction, increase in violence, and be accompanied by a falling barometer, it is probable she lies in the path of the advancing storm—the most critical of all positions.

The wind in front of the storm-field is, from the nature of the case, directed across the path of the centre; blowing towards the path on one side, and away from it on the other. Consequently, if we suppose the cyclone to be bisected by a line representing its path, a little consideration will show that in the semicircle on one side of the path, a ship running before the wind may probably be brought to cross the path of the storm in front of its centre, and therefore under circumstances of the greatest danger; in the semicircle on the other side of the path a ship running before the wind will probably cross the path in rear of the centre. The former of these semicircles has been called the "dangerous" semicircle.

When looking in the direction in which the storm is travelling the dangerous semicircle is always on the right hand in the northern hemisphere, on the left hand in the southern hemisphere; also in both hemispheres in the right-hand semicircle the wind, to a ship hove-to, always veers, in the left-hand semicircle it always backs. The semicircle with veering winds is the dangerous semicircle in the northern hemisphere; the semicircle with backing winds is the dangerous semicircle in the southern hemisphere.

The recurvature of the path always takes place towards the side on which the dangerous semicircle is situated, *i.e.*, to the right in the northern, to the left in the southern hemisphere. Hence in the northern hemisphere, so long as the vortex is travelling to the west the winds in front of the advancing centre are north-easterly; when the vortex turns to the north, the winds in front are easterly; and after it has turned to the eastward the winds in front are south-easterly. A similar sequence will arise in the southern hemisphere

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but in the opposite order, the winds in front of the vortex beginning with south-east and ending with north-east when the vortex has turned to the eastward.

We derive, then, the following rules to find *the most dangerous wind*, supposing always that the track of the storm is such as is indicated above, recurving in about lat. 30° N. or lat. 26° S. :—

| Northern Hemisphere. | | Southern Hemisphere. | |
|---|---|---|---|
| Between the Equator and 30° N. lat. | N.E. | Between the Equator and 26° S. lat. | S.E. |
| About 30° N. lat. | E. | About 26° S. lat. | E. |
| Northward of 30° N. lat. | S.E. | Southward of 26° S. lat. | N.E. |

These winds are most dangerous, because in each case if the wind continues steady from that point and the barometer continues to fall rapidly the ship must be on the path of the storm and directly in front of it, so that she is in the position of greatest peril.

It is difficult to estimate the distance of the centre of the vortex from a vessel. This partly arises from the uncertainty as to the relation between the bearing of the centre and the direction of the wind, and greatly from there being no means of knowing whether the storm be of large or small dimensions. If the barometer falls slowly, and the weather only gradually gets worse, it is reasonable to suppose that the centre is distant: and conversely with a rapidly falling barometer and increasing bad weather the centre may be supposed to be approaching dangerously near.

### Practical Rules for Seamen in Tropical Cyclones.

When in the region, and in the season of revolving storms, be on the watch for the premonitory signs. *Constantly and carefully observe and record the barometer.*

When there are indications of a cyclone being near, heave-to, and carefully observe and record the changes of the barometer and wind, so as to find the bearing of the centre, and ascertain by the shifting of the wind in which semicircle the vessel is situated. Much will often depend upon heaving-to in time.

When, after careful observation, there is reason to believe that the centre of a cyclone is approaching, the following rules should



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be followed in determining whether to remain hove-to or not, and the tack on which to remain hove-to :—

Northern hemisphere.—If in the right-hand semicircle, heave-to on the starboard-tack. If in the left-hand semicircle, run, keeping the wind, if possible, on the starboard-quarter; and when the barometer rises, if necessary to keep the ship from going too far from the proper course, heave-to on the port-tack.

Southern hemisphere.—If in the right-hand semicircle, run, keeping the wind, if possible, on the port-quarter; and when the barometer rises, if necessary to keep the ship from going too far from the proper course, heave-to on the starboard-tack. If in the left-hand semicircle, heave-to on the port-tack.

Both hemispheres.—When the ship lies in the direct line of advance of the storm—which position is, as previously observed, the most dangerous of all—run. And in all cases act so as to increase as soon as possible the distance from the centre; bearing in mind that the whole storm field is advancing.

Heaving-to, in both hemispheres.—If the ship be in the right-hand semicircle, heave-to on the starboard-tack. In the left-hand semicircle, heave-to on the port-tack; these being the tacks on which the ship will "come up" as the wind shifts.

In receding from the centre of a cyclone, the barometer will rise, and the wind and sea subside.

It should be remarked that in some cases vessels may, if the storm be travelling slowly, sail from the dangerous semicircle across the front of the storm, and thus out of its influence. But as the rate at which the storm is travelling is quite uncertain, this is a hazardous proceeding, and the seaman should hesitate and carefully consider all the circumstances of the case, particularly observing the rate at which the barometer is falling before he attempts to cross.

*Cyclones of the South Indian Ocean.*—The researches of Mr. Meldrum, Director of the Government Observatory at Mauritius, have shown that, in the South Indian Ocean, a vessel approaching a cyclone on its southern side almost always encounters a strong Trade wind, which freshens to a gale. It is difficult to tell when the Trade forms part of the storm *circle*; consequently the bearing

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of the centre can seldom, in this position, be inferred from the direction of the wind.

It is therefore recommended under such circumstances to heave-to and watch the wind and barometer; when the wind has shifted decidedly to the east or south the passage of the centre with respect to the vessel's position may be approximately inferred; and when the barometer *has fallen six-tenths of an inch* from its height at the commencement of the storm, the bearing of the centre may be taken as nearly at right angles to the direction of the wind.

If the wind shift from S.E. decidedly towards the south, run to the N.W. Or, if the wind remain steady at S.E., increase in force, the barometer still falling, it is probable the storm is advancing directly towards the vessel; in such case, the most dangerous of all, run to the N.W.

It is also stated that in the cyclones of the South Indian Ocean, north-easterly and easterly winds often, if not always blow towards the centre. Such being the case, it is better to make as much easting as possible.

It might easily be shown, the same writer remarks, that all the homeward-bound vessels that put into Mauritius for repairs do so in consequence of damage sustained in a cyclone which they entered on its northern side. There is a strong temptation to such vessels to run on with a favourable breeze; but a freshening northerly or north-easterly wind, with a falling barometer, and threatening appearance of the weather, should warn them to heave-to in time.

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## STAR OBSERVING.

IN these days of rapid travelling, the methods of determining a ship's position during the night by means of star observations is very important; and it is greatly to be regretted that so little is done in that way, principally it would seem from a fear that observations of stars are so uncertain, that it is best to leave them alone.

It will be my endeavour to show that they are really valuable auxiliaries to the observations by the sun, and with due regard to certain corrections to be hereafter mentioned, may be almost as accurate.

During the last five years I have been constantly observing stars both for the determination of the latitude and time, with very good results latterly. And I propose pointing out a few ways which may help star observers.

The first thing needful is constant practice on all available occasions, and the determination of the observer's personal equation. This is very important. Why, if an observer can take a good observation of the sun, should he not be able to take one of a star, for on nearly all ordinary nights when the stars are visible, the horizon can be seen. The difficulty lies in getting a good contact between the horizon and the reflected star. My experience shows that the same observer, under similar circumstances, measures the altitude to almost the same position, either above or below the horizon, the difference between the horizon and this point representing his personal equation, which was to be determined, and which, of course, will vary with the state of the atmosphere near the horizon. Once known it can be applied to the altitude observed, when it will be found that they give good results.

The best way to determine the personal equation seems to be to take numbers of observations in the morning and evening, when it is quite dark or only moonlight, and comparing their results with a standard latitude obtained by observing stars in twilight, when very accurate observations can be made, using a telescope in the

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sextant, and the difference of latitude run in the interval carefully allowed for. When running along a parallel of latitude this method applies very well. By classifying these observations according to the state of the atmosphere, the amount of moonlight, the position of the moon with regard to the part of the horizon when the contact is made, &c., and taking a mean of each class, good results may be obtained.

The following table gives various personal errors deduced from my own observations. By applying the correction for circumstances which agree best with those I was experiencing at a given time, I have been able to get good approximate results.

| State of horizon. | Correction to be applied to observed altitude using unarmed sextant. |
|---|---|
| Dark and clear ... ... ... ... | + 1 minute. |
| Faint moonlight, hazy ... ... ... | + 3 „ |
| Dark and hazy ... ... ... ... | + 5 „ |

There are other methods by which a standard or comparison latitude may be obtained, but the above-mentioned seems to be the best.

I have observed some thousands of stars and find that my personal error varies from about 1′ in clear nights to about 10′ in dark, hazy nights with a high sea, using an unarmed sextant.

The best form of sextant is one having an ivory arc, and it would be a useful thing to have one only divided to minutes, with two index shades of a very faint neutral tint, as often, when taking bright stars, they are extremely useful to reduce their brilliancy. Difficulty is often found at night in reading off, but with a good bullseye lantern held by an assistant or fixed to a skylight, and a little practice it becomes perfectly easy. The advantage of the bullseye being that all the light can be concentrated on the vernier, and also kept out of the eyes. If the sextant were divided to minutes only, there would be no need of a reading microscope.

Telescopes for star observing are often fitted to sextants; but on dark or hazy nights these are generally useless. The best thing is a pair of low power opera glasses with a large field, which can be fitted easily to any sextant without causing inconvenience. Care

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should be taken to determine the index error with the glasses in, and to see that they have no motion on their pivot. But for all practical purposes stars can be taken just as well on dark nights with the unarmed sextant.

A good way of determining the time stars' transits is to keep an ordinary watch set to sidereal time, it can then at once be seen when a star is on the meridian. The watch being on all possible occasions corrected by sun observations.

But it often happens during cloudy weather that only cursory glances can be obtained of the stars, and there is no chance of getting a transit. In these cases double altitudes afford at once an easy and tolerably accurate method of determining both the latitude and time. Admiral Shadwell's star tables are very useful, as they contain tables of useful stars for observing, and also short methods of doing the work. Sumner's method can always be applied and if there is a set of azimuth, or Johnson's, or Admiral Heath's tables, the work can be considerably shortened, and this method can be used at all times, when the stars can be seen. For instance, it frequently happens when making the English Channel in the winter months that no sun is visible for days, while at night glimpses of stars are often to be got, and this is quite sufficient to obtain an altitude.

In observing star azimuths the sidereal watch will be useful, as the star's approximate hour angle can at once be obtained, and the true bearing taken out from the azimuth tables, as in looking at the sun's.

It may not be out of place to mention that by far the most convenient and easy star atlas is Proctor's small star atlas. No difficulty will be experienced in even finding small stars with this book, and in size it is very handy.

D. WILSON BARKER, R.N.R., F.R. Met. Soc.

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## MODEL YACHTING.

FOR some years past the sailing of model yachts has been going the way of all sports in the present day, that is to say, has been made more and more a matter of serious business. If, as is often remarked, it originated in the toy-boat and paper sail of the boy, it has yet developed into healthful pastime for men, and certainly needs no more to be excused than any other kind of recreation.

The attractions of cricket can bring a team from the Antipodes, and draw thousands of spectators to witness their performances, and model yachtsmen need not be in any respect ashamed of an amusement which calls into exercise mechanical skill and ingenuity in preparing the boat, and judgment and foresight in its management. It is of course illusory to suppose that the serious interests of naval architecture will be any more advanced by sailing model yachts than they will by competitions between full-sized craft of the modern type such as we described in a paper in our June number; but there is no need to seek any other recommendations for the sport than its own obvious merits.

We have been led to notice the subject from the fact that model yachting has now reached the dignity of special representation in the press, and we gladly hail our new contemporary *The Model Yachtsman*, of which the first monthly number appeared in March last. It fitly starts with a series of histories of the principal clubs, from which it appears that some of them have been in existence a considerable period. Thus the Liverpool club dates from 1862, having within a year of its commencement had as many as a hundred members, and indeed made such rapid progress that there was room for dissension, and on questions of politics (which divide men in Liverpool certainly as much as in any place in her Majesty's dominions) it split into two, but the original club alone now survives. The sailing place is the lake in Sefton Park, the design of which was altered to suit it for the purpose, and there the club has a boat-house which cost them £700. The excellent financial condition of the club is also shown by the fact that the prizes sailed for amount to about £40 per annum. There

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is a flourishing club at Greenwich, in which there are over 40 models, but Hull would appear to be especially the home of model yachting, there being two flourishing clubs—the Kingston and the Albert—each of which holds an annual exhibition of models. In London there are three local clubs—one on the Serpentine, one in Victoria Park, and one at Clapham, using the Long Pond on the Common. Besides these there is also a M. Y. Sailing Association, which would appear to sail on the Serpentine. In a series of papers in *The Model Yachtsman* the amateur is instructed in the building and fitting of a model yacht from the selection of the block of wood to the fixing of the pin rails. The writer, we notice, recommends the cutter rig, and, no doubt, as a general rule, its special advantages are as great in models as in full-sized yachts. It is, however, noticeable, that where the sailing-place is in a park, and consequently subject to sudden gusts of wind through the trees, craft are preferred with two masts, as they are more certain to keep their course than are cutters.

Model yachtsmen appear to be as much exercised about sailing rules as are their brethren of the larger craft. Some clubs divide their yachts into classes with regard to length only, others have tonnage rules. Of the former, some measure the length on the load water-line, others on deck. In some cases it is length over all, in others from stem to post. For tonnage rules, some use a rule similar to the old tonnage rule, others the new rule of the Yacht Racing Association, and others, again, have special tonnage rules of their own. One advantage likely to arise from the existence of *The Model Yachtsman* is the adoption, after full discussion, of a uniform rule of measurement, which would enable craft from various places to compete, and thus enlarge the interest already taken in what is certainly a cheap and picturesque means of recreation.

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# MERCHANT SHIPPING LEGISLATION IN THE UNITED STATES.

## CIRCULAR.

### REGULATIONS UNDER THE SHIPPING ACT.

1884.—Dept. No. 92.—Secretary's Office—(I. R. & N.)

TREASURY DEPARTMENT, Washington, D.C., June 27, 1884.

*To Collectors of Customs and Shipping Commissioners:*

For the information of Collectors of Customs and Shipping Commissioners, the following Act, approved June 26, 1884, is published for their guidance in the matters coming within their supervision and control:

AN ACT to remove certain burdens on the American merchant marine, and encourage the American foreign carrying trade, and for other purposes.

*Alien Officers of Vessels of United States.*

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the last clause of section forty-one hundred and thirty-one of the Revised Statutes be amended so as to read as follows:—

"All the officers of vessels of the United States shall be citizens of the United States, except that in cases where, on a foreign voyage, or on a voyage from an Atlantic to a Pacific port of the United States, any such vessel is for any reason deprived of the services of an officer below the grade of master, his place, or a vacancy caused by the promotion of another officer to such place, may be supplied by a person not a citizen of the United States until the first return of such vessel to its home port; and such vessel shall not be liable to any penalty or penal tax for such employment of an alien officer."

*Discharge of Seamen by Consular Officer.*

Sec. 2. That section forty-five hundred and eighty of the Revised Statutes be amended so as to read as follows:—

"Sec. 4580. Upon the application of the master of any vessel

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to a consular officer to discharge a seaman, or upon the application of any seaman for his own discharge, if it appears to such officer that said seaman has completed his shipping agreement, or is entitled to his discharge under any act of Congress or according to the general principles or usages of maritime law as recognized in the United States, such officer shall discharge said seaman, and require from the master of said vessel, before such discharge shall be made, payment of the wages which may then be due said seaman; but no payment of extra wages shall be required by any consular officer upon such discharge of any seaman except as provided in this Act."

*Extra wages on Discharge in Foreign Port.*

Sec. 3. That section forty-five hundred and eighty-three of the Revised Statutes be amended so as to read as follows:—

"Sec. 4583. Whenever on the discharge of a seaman in a foreign country, on his complaint that the voyage is continued contrary to agreement, the consular officer shall be satisfied that such voyage has been designedly and unnecessarily prolonged in violation of the articles of shipment; or whenever a seaman is discharged by a consular officer in consequence of any hurt or injury received in the service of the vessel, such consular officer shall require the payment by the master of one month's wages for such seaman over and above the wages due at the time of discharge."

*Survey of Vessel in Foreign Port—Report of Inspectors.*

Sec. 4. That section forty-five hundred and sixty-one of the Revised Statutes be amended so as to read as follows:—

"Sec. 4561. The inspectors in their report shall also state whether, in their opinion, the vessel was sent to sea unsuitably provided in any important or essential particular, by neglect or design, or through mistake or accident; and in case it was by neglect or design, and the consular officer approves of such finding, he shall discharge such of the crew as requested, and shall require the payment by the master of one month's wages for each seaman over and above the wages then due. But if, in the opinion of the inspectors, the defects or deficiencies found to exist have been the result of mistake or accident, and could not, in the exercise of

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ordinary care, have been known and provided against before the sailing of the vessel, and the master shall, in a reasonable time, remove or remedy the causes of complaint, then the crew shall remain and discharge their duty."

*Discharge of Crew in Foreign Port—Extra wages.*

Sec. 5. That section forty-five hundred and eighty-two of the Revised Statues be amended so as to read as follows:—

"Sec. 4582. Whenever a vessel of the United States is sold in a foreign country, and her company discharged, it shall be the duty of the master to produce to the consular officer the certified list of his ship's company, and also the shipping articles, and to pay to said consular officer for every seaman so discharged one month's wages over and above the wages which may then be due to such seaman; but in case the master of the vessel so sold shall, with the assent of said seaman, provide him with adequate employment on board some other vessel bound to the port at which he was originally shipped, or to such other port as may be agreed upon by him, then no payment of extra wages shall be required."

*Deserters—Action of Consular Officers.*

Sec. 6. That section forty-six hundred of the Revised Statutes be amended so as to read as follows:—

"Sec. 4600. It shall be the duty of consular officers to reclaim deserters and discountenance insubordination by every means within their power, and where the local authorities can be usefully employed for that purpose, to lend their aid and use their exertions to that end in the most effectual manner. In all cases where deserters are apprehended the consular officer shall inquire into the facts; and if he is satisfied that the desertion was caused by unusual or cruel treatment, he shall discharge the seaman, and require the master of the vessel from which such seaman is discharged to pay one month's wages over and above the wages then due; and the officer discharging such seaman shall enter upon the crew-list and shipping articles the cause of discharge, and the particulars in which the cruelty or unusual treatment consisted, and the facts as to his discharge or re-engagement, as the case may be, and subscribe his name thereto officially."

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*Extra wages—Failure of Consular Officer to Collect.*

Sec. 7. That section forty-five hundred and eighty-one of the Revised Statutes be amended so as to read as follows:—

"Sec. 4581. If any consular officer, when discharging any seaman, shall neglect to require the payment of and collect the arrears of wages and extra wages required to be paid in the case of the discharge of any seaman, he shall be accountable to the United States to the full amount thereof. If any seaman, after his discharge, shall have incurred any expense for board or other necessaries at the place of his discharge, before shipping again, or for transportation to the United States, such expense shall be paid out of the arrears of wages and extra wages received by the consular officer, which shall be retained for that purpose and the balance only paid over to such seaman."

*Repeal of Section* 4584, *Revised Statutes.*

Sec. 8. That section forty-five hundred and eighty-four of the Revised Statutes be hereby repealed.

*Transportation of Destitute American Seamen from Foreign Ports.*

Sec. 9. That section forty-five hundred and seventy-eight of the Revised Statutes be amended so as to read as follows:—

"Sec. 4578. All masters of vessels of the United States, and bound to some port of the same, are required to take such destitute seamen on board their vessels, at the request of consular officers, and to transport them to the port in the United States to which such vessel may be bound, on such terms, not exceeding ten dollars for each person for voyages of not more than thirty days, and not exceeding twenty dollars for each person for longer voyages, as may be agreed between the master and the consular officer; and said consular officer shall issue certificates for such transportation, which certificate shall be assignable for collection. If any such destitute seaman is so disabled or ill as to be unable to perform duty, the consular officer shall so certify in the certificate of transportation, and such additional compensation shall be paid as the First Comptroller of the Treasury shall deem proper. Every such master who refuses to receive and transport such seaman on the request or

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order of such consular officer shall be liable to the United States in a penalty of one hundred dollars for each seaman so refused. The certificate of any such consular officer, given under his hand and official seal, shall be presumptive evidence of such refusal in any court of law having jurisdiction for the recovery of the penalty. No master of any vessel shall, however, be obliged to take a greater number than one man to every one hundred tons burden of the vessel on any one voyage."

*Advance Wages not to be Paid to Seamen—Assignment of Pay to Wife or Mother.*

Sec. 10. That it shall be, and is hereby, made unlawful in any case to pay any seaman wages before leaving the port at which such seaman may be engaged in advance of the time when he has actually earned the same, or to pay such advance wages to any other person, or to pay any person, other than an officer authorised by Act of Congress to collect fees for such service, any remuneration for the shipment of seamen. Any person paying such advance wages or such remuneration shall be deemed guilty of a misdemeanour, and, upon conviction, shall be punished by a fine not less than four times the amount of the wages so advanced or remuneration so paid, and may be also imprisoned for a period not exceeding six months, at the discretion of the Court. The payment of such advance wages or remuneration shall in no case, except as herein provided, absolve the vessel, or the master or owner thereof, from full payment of wages after the same shall have been actually earned, and shall be no defence to a libel, suit, or action for the recovery of such wages: *Provided*, That this section shall not apply to whaling-vessels: *And provided further*, That it shall be lawful for any seaman to stipulate in his shipping agreement for an allotment of any portion of the wages which he may earn to his wife, mother, or other relative, but to no other person or corporation. And any person who shall falsely claim such relationship to any seaman in order to obtain wages so allotted shall, for every such offence, be punishable by a fine of not exceeding five hundred dollars, or imprisonment not exceeding six months, at the discretion of the Court. This section shall apply as well to foreign vessels as to vessels of the United

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States; and any foreign vessel the master, owner, consignee, or agent of which has violated this section or induced or connived at its violation, shall be refused a clearance from any port of the United States.

*Vessels of United States must have Slop-Chest, &c.*

Sec. 11. That every vessel mentioned in section forty-five hundred and sixty-nine of the Revised Statutes shall also be provided with a slop-chest, which shall contain a complement of clothing for the intended voyage for each seaman employed, including boots or shoes, hats or caps, under clothing and outer clothing, oiled clothing, and everything necessary for the wear of a seaman; also a full supply of tobacco and blankets. Any of the contents of the slop-chest shall be sold, from time to time, to any or every seaman applying therefor, for his own use, at a profit not exceeding ten per centum of the reasonable wholesale value of the same at the port at which the voyage commenced. And if any such vessel is not provided, before sailing, as herein required, the owner shall be liable to a penalty of not more than five hundred dollars. The provisions of this section shall not apply to vessels plying between the United States and the Dominion of Canada, Newfoundland, the Bermuda Islands, the Bahama Islands, the West Indies, Mexico and Central America.

*Abolition of Consular Fees for Services to Vessels and Seamen—Compensation of Consular Officers.*

Sec. 12. That on and after July first, eighteen hundred and eighty-four, no fees named in the tariff of consular fees prescribed by order of the President shall be charged or collected by consular officers for the official services to American vessels and seamen. Consular officers shall furnish the master of every such vessel with an itemized statement of such services performed on account of said vessel, with the fee so prescribed for each service, and make a detailed report to the Secretary of the Treasury of such services and fees, under such regulations as the Secretary of State may prescribe; and the Secretary of the Treasury shall allow consular officers who are paid in whole or in part by fees such compensation

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for said services as they would have received prior to the passage of the Act: *Provided*, That such services, in the opinion of the Secretary of the Treasury have been necessarily rendered; and a sum sufficient for the payment of such compensation, when thus adjusted by the Secretary of the Treasury, is hereby appropriated out of any money in the Treasury not otherwise appropriated.

*Certificates of Services by Consular Officers.*

Sec. 13. That section forty-two hundred and thirteen of the Revised Statutes be amended so as to read as follows:—

"Sec. 4213. It shall be the duty of all masters of vessels for whom any official services shall be performed by any consular officer, without the payment of a fee, to require a written statement of such services from such consular officer, and, after certifying as to whether such statement is correct, to furnish it to the collector of the district in which such vessels shall first arrive on their return to the United States; and if any such master of a vessel shall fail to furnish such statement, he shall be liable to a fine of not exceeding fifty dollars, unless such master shall state under oath that no such statement was furnished him by said consular officer. And it shall be the duty of every collector to forward to the Secretary of the Treasury all such statements as shall have been furnished to him, and also a statement of all certified invoices which shall have come to his office, giving the dates of the certificates and the names of the persons for whom and of the consular officer by whom the same were certified."

*Tonnage Tax.*

Sec. 14. That in lieu of the tax on tonnage of thirty cents per ton per annum heretofore imposed by law, a duty of three cents per ton, not to exceed in the aggregate fifteen cents per ton in any one year, is hereby imposed at each entry on all vessels which shall be entered in any port in the United States from any foreign port or place in North America, Central America, the West India Islands, the Bahama Islands, the Bermuda Islands, or the Sandwich Islands, or Newfoundland; and a duty of six cents per ton, not to exceed thirty cents per ton per annum, is hereby imposed at each entry



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upon all vessels which shall be entered in the United States from any other foreign ports: *Provided*, That the President of the United States shall suspend the collection of so much of the duty herein imposed, on vessels entered from any port in the Dominion of Canada, Newfoundland, the Bahama Islands, the Bermuda Islands, the West India Islands, Mexico and Central America down to and including Aspinwall and Panama, as may be in excess of the tonnage and lighthouse dues, or other equivalent tax or taxes, imposed on American vessels by the Government of the foreign country in which such port is situated and shall upon the passage of this Act, and from time to time thereafter as often as it may become necessary by reason of changes in the laws of the foreign countries above mentioned, indicate by proclamation the ports to which such suspension shall apply, and the rate or rates of tonnage duty if any to be collected under such suspension. *And provided further*, That all vessels which shall have paid the tonnage tax imposed by section forty-two hundred and nineteen of the Revised Statutes for the current year, shall not be liable to the tax herein levied until the expiration of the certificate of last payment of the said tax. And sections forty-two hundred and twenty-three and forty-two hundred and twenty-four and so much of section forty-two hundred and nineteen of the Revised Statutes as conflicts with this section, are hereby repealed.

*Abolition of Marine Hospital Dues.*

Sec. 15. That sections forty-five hundred and eighty-five, forty-five hundred and eighty-six, and forty-five hundred and eighty-seven of the Revised Statutes, and all other Acts and part of Acts providing for the assessment and collection of a hospital tax for seamen, are hereby repealed, and the expense of maintaining the Marine Hospital Service shall hereafter be borne by the United States out of the receipts for duties on tonnage provided for by this Act; and so much thereof as may be necessary, is hereby appropriated for that purpose.

*Withdrawal free of duty of supplies for vessels of the United States.*

Sec. 16. All articles of foreign production needed, and actually withdrawn from bonded warehouses, for supplies not including

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equipment of vessels engaged in the foreign trade, including the trade between the Atlantic and Pacific ports of the United States, may be so withdrawn free of duty, under such regulations as the Secretary of the Treasury may prescribe.

*Drawback on Foreign Materials used in Building Vessels.*

Sec. 17. When a vessel is built in the United States for foreign account, wholly or partly of foreign materials on which import duties have been paid, there shall be allowed on such vessel, when exported, a drawback equal in amount to the duty paid on such materials, to be ascertained under such regulations as may be prescribed by the Secretary of the Treasury. Ten per centum of the amount of such drawback so allowed shall, however, be retained for the use of the United States by the collector paying the same.

*Liability of Shipowners.*

Sec. 18. That the individual liability of a shipowner shall be limited to the proportion of any or all debts and liabilities that his individual share of the vessel bears to the whole; and the aggregate liabilities of all the owners of a vessel on account of the same shall not exceed the value of such vessels and freight pending: *Provided*, That this provision shall not affect the liability of any owner incurred previous to the passage of this Act, nor prevent any claimant from joining all the owners in one action; nor shall the same apply to wages due to persons employed by said shipowners.

*Shipment of Seamen for Stated Periods.*

Sec. 19. That a master of a vessel in the foreign trade may engage a seaman at any port in the United States, in the manner provided by law, to serve on a voyage to any port, or for the round trip from and to the port of departure, or for a definite time, whatever the destination. The master of a vessel making regular and stated trips between the United States and a foreign country may engage a seaman for one or more round trips, or for a definite time, or on the return of said vessel to the United States, may re-ship such seaman for another voyage in the same vessel, in the



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manner provided by law, without the payment of additional fees to any officer for such re-shipment or re-engagement.

*Shipment of Seamen for Stated Periods at Foreign Ports.*

Sec. 20. That every master of a vessel in the foreign trade may engage any seaman at any port out of the United States, in the manner provided by law, to serve for one or more round trips from and to the port of departure, or for a definite time, whatever the destination; and the master of a vessel clearing from a port of the United States with one or more seamen engaged in a foreign port as herein provided shall not be required to re-ship in a port of the United States the seamen so engaged, or to give bond, as required by section forty-five hundred and seventy-six of the Revised Statutes, to produce said seamen before a boarding officer on the return of the said vessel to the United States.

*Hail Ports of Vessels of United States.*

Sec. 21. That the word "port," as used in sections forty-one hundred and seventy-eight and forty-three hundred and thirty-four of the Revised Statutes, in reference to painting the name and port of every registered or licensed vessel on the stern of such vessel, shall be construed to mean either the port where the vessel is registered or enrolled, or the place in the same district where the vessel was built or where one or more of the owners reside.

*Abolition of Capitation Tax on Immigrants from Contiguous Foreign Territory.*

Sec. 22. That until the provisions of section one, chapter three hundred and seventy-six, of the laws of eighteen hundred and eighty-two, shall be made applicable to passengers coming into the United States by land carriage, said provisions shall not apply to passengers coming by vessels employed exclusively in the trade between the ports of the United States and the ports of the Dominion of Canada or the ports of Mexico.

*Repeal of Sections* 3976 *and* 4203, *Revised Statutes.*

Sec. 23. That sections thirty-nine hundred and seventy-six and forty-two hundred and three of the Revised Statutes of the United

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States, and all other compulsory laws and parts of laws that oblige American vessels to carry the mails to and from the United States arbitrarily, or that prevent the clearance of vessels until they shall have taken mail matter on board, be and the same are hereby repealed, but such repeal shall not take effect until the first day of April, eighteen hundred and eighty-five.

*Delivery of Merchandise.*

Sec. 24. That section twenty-nine hundred and sixty-six of the Revised Statutes be amended by striking out the words "propelled in whole or in part by steam;" so that said section as amended shall read as follows:—

"Sec. 2966. When merchandise shall be imported into any port of the United States from any foreign country in vessels, and it shall appear by the bills of lading that the merchandise so imported is to be delivered immediately after the entry of the vessel, the collector of such port may take possession of such merchandise and deposit the same in bonded warehouse; and when it does not appear by the bills of lading that the merchandise so imported is to be immediately delivered, the collector of the customs may take possession of the same and deposit it in bonded warehouse, at the request of the owner, master, or consignee of the vessel, on three days' notice to such collector after the entry of the vessel."

*Pay of Inspectors for Night Service on Sailing Vessels.*

Sec. 25. That section twenty-eight hundred and seventy-two of the Revised Statutes be amended by adding thereto the following:—

"When the license to unload between the setting and rising of the sun is granted to a sailing vessel under this section, a fixed, uniform, and reasonable compensation may be allowed to the inspector or inspectors for service between the setting and rising of the sun, under such regulations as the Secretary of the Treasury may prescribe, to be received by the collector from the master, owner, or consignee of the vessel, and to be paid by him to the inspector or inspectors."

*Refund of Fines, &c., covered into Treasury.*

Sec. 26. That whenever any fine, penalty, forfeiture, exaction or charge arising under the laws relating to vessels or seamen has

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been paid to any collector of customs or consular officer, and application has been made within one year from such payment for the refunding or remission of the same, the Secretary of the Treasury, if on investigation he finds that such fine, penalty, forfeiture, exaction, or charge was illegally, improperly, or excessively imposed, shall have the power, either before or after the same has been covered into the Treasury, to refund so much of such fine, penalty, forfeiture, exaction, or charge as he may think proper, from any moneys in the Treasury not otherwise appropriated.

*Appointment of Shipping Commissioners—Accounts of Receipts—Regulations—Compensation and Expenses of Shipping Commissioners.*

Sec. 27. That section forty-five hundred and one of the Revised Statutes is hereby amended so as to read as follows:—

"Sec. 4501. The Secretary of the Treasury shall appoint a commissioner for each port of entry, which is also a port of ocean navigation, and which, in his judgment, may require the same; such commissioner to be termed a shipping commissioner, and may, from time to time, remove from office any such commissioner whom he may have reason to believe does not properly perform his duty, and shall then provide for the proper performance of his duties until another person is duly appointed in his place: *Provided*, That shipping commissioners now in office shall continue to perform the duties thereof until others shall be appointed in their places. Shipping commissioners shall monthly render a full, exact, and itemized account of their receipts and expenditures to the Secretary of the Treasury, who shall determine their compensation, and shall from time to time determine the number and compensation of the clerks appointed by such commissioner, with the approval of the Secretary of the Treasury, subject to the limitations now fixed by law. The Secretary of the Treasury shall regulate the mode of conducting business in the shipping offices to be established by the shipping commissioners as hereinafter provided, and shall have full and complete control over the same, subject to the provisions herein contained; and all expenditures by shipping commissioners shall

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be audited and adjusted in the Treasury Department in the mode and mannner provided for expenditure in the collections of customs." All fees of shipping commissioners shall be paid into the Treasury of the United States and shall constitute a fund which shall be used under the direction of the Secretary of the Treasury to pay the compensation of said commissioners and their clerks and such other expenses as he may find necessary to ensure the proper administration of their duties.

*Fees for Inspection of Steam-Vessels.*

Sec. 28. Before issuing any inspection certificate to any steamer the collector or other chief officer of customs for the port or districts shall demand and receive from the owners thereof, as a compensation for the inspection and examinations made for the year, the following sums, in addition to the fees for issuing enrolments and licenses now allowed by law, according to the tonnage of the vessel: For each steam-vessel of one hundred tons or under, ten dollars; and for each and every ton in excess of one hundred tons, five cents. in lieu of the fees now provided by law.

*Unlading at Places not Ports of Entry.*

Sec. 29. That section twenty-seven hundred and seventy-six of the Revised Statutes is hereby amended by adding thereto the following:

"*Provided*, That vessels arriving at a port of entry in the United States, laden with coal, salt, railroad iron, and other like articles in bulk, may proceed to places within that collection district to be specially designated by the Secretary of the Treasury, by general regulations or otherwise, under the superintendence of customs officers, at the expense of the parties interested, for the purpose of unlading cargoes of the character before mentioned."

Sec. 30. All laws and parts of laws in conflict with the provisions of this Act are hereby repealed; and this Act shall take effect and be in force on and after July first, eighteen hundred and eighty-four.

Approved, June 26, 1884.

The first section relieves vessels of the United States from the penal-tonnage tax hitherto levied by virtue of Sec. 4219, Revised

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Statutes, for the employment of alien officers below the grade of master, provided the vessel be on a foreign voyage, or on a voyage between Atlantic and Pacific ports, and such vessel has been deprived of the services of such subordinate officers by promotion or other cause. Before levying the tonnage-tax of fifty cents per ton in this class of cases, collectors will report the facts to the Department and await its instructions.

Collectors will see that every vessel of the United States departing to or arriving from any foreign port other than one of those enumerated in the last clause of Sec. 11 be inspected, to see that the requirements of that section regarding a slop-chest and its contents have been observed. In case these requirements have not been observed, collectors will report the fact to the shipping commissioner, in order that the owner may be prosecuted for the penalty. If the collector himself exercises the functions of a shipping commissioner, he will himself take measures to enforce the penalty by suit against the owner.

Sec. 14 abolishes the old rate of tonnage tax on vessels of thirty cents per ton, and imposes the tax at the rates of three and six cents per ton on entry. Vessels arriving in the United States from any foreign port of North America north of the southern terminus of the Isthmus of Darien, or any port in Newfoundland, the West Indian, Bahama, Bermuda, or Sandwich Islands, will pay a duty of three cents per ton on every entry; but the total tax in any one year on entries from the ports specified, is not to exceed fifteen cents. The tax to be collected on vessels making entry on arrival from other foreign ports is six cents per ton on every entry; but the total tax collected at six cents per ton is not to exceed thirty cents per ton in any one year.

Where vessels have paid a tax of thirty cents at the old rate, tax is not to be collected on either of the rates newly imposed until after the expiration of the certificate of the last payment of that tax.

Any vessel making such voyages as to become liable in any one year under both rates—that is, at three cents per ton and six cents per ton—shall not be held liable to an aggregate tax of more than thirty cents per ton for any one year, reckoned from the date of the entry

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and payment of her first tax at either rate; but the three-cent tax per ton shall not be collected on more than five entries in any one year. The monthly returns of tonnage tax will be made on the usual forms, as heretofore.

For half a ton or more than half a ton of the measurement of a vessel, collection will be made at the full rates of three or six cents per ton; for less than half a ton no collection will be made.

Collectors will take no action under the first proviso of Sec. 14 by way of suspension of collection of tax till they have been informed that such suspension has been authorized by a proclamation of the President.

Sec. 15 abolishes the marine-hospital tax on seamen, and it will not hereafter be collected; nor will seaman's time-books be required.

Sec. 19 prohibits the payment of additional fees to any officer when a seaman is re-engaged or reshipped on a vessel making regular and stated trips between the United States and foreign countries. The same section allows the engagement of a seaman for a vessel in the foreign trade for one or more round trips, or for a *definite period*, whatever the destination of the vessel.

Sec. 20 permits the similar engagement of a seaman in a foreign port upon a vessel in the foreign trade, and waives the requirement of reshipment of such seaman on her clearance foreign, and also waives the requirement to return him to the United States.

Sec. 21 permits the hailing port of a vessel to be either the port where she is documented or the place where she was built, or where one or more of the owners reside, provided the place be in the district where she is documented.

Collectors will not collect the fifty-cent head-money imposed by the Act of August 8, 1882, on account of emigrants from Canada or Mexico brought by any vessel beginning its voyage in a port of the Dominion of Canada, or a port of Mexico and terminating it at a port of the United States, such collection being virtually repealed by Sec. 22.

Sec. 27 transfers the appointing and supervision of Shipping Commissioners from the United States Circuit Courts to the Secretary of the Treasury. Such supervision will of course be

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subject to the express limitations or provisions of the Act. Shipping commissioners are also required to pay all moneys received by them as fees into the Treasury of the United States. This may be done by depositing such moneys with an Assistant Treasurer or Designated Depositary in the manner and at the times specified in Department Circulars, No. 2, of 1876, and No. 56, of 1879, relating to the deposit of public moneys. Certificates of the deposit of such moneys will be promptly sent by mail to the Secretary of the Treasury.

No expenditures made by shipping commissioners will be allowed in their accounts unless previously authorized by this Department.

The monthly accounts of receipts and expenditures required to be rendered by such commissioners to the Secretary of the Treasury will be in the form of the "United States in current account with the commissioner," and shall exhibit on the credit side the sums received as fees, and on the debit side the amounts deposited, the number and amount of each certificate of deposit being given. When necessary, balances will be carried forward from one account to another.

The provisions of Sec. 4503, Revised Statutes, empowering officers of the customs to act *ex officio* as shipping commissioners under certain conditions, are recognised as still in force.

Sec. 29 allows vessels, foreign or domestic, arriving at a port of entry in the United States, and laden with coal, salt, railroad-iron, or like articles in bulk, to proceed to any place in the district to unlade after designation of the place by the Secretary of the Treasury. When applications are made for the privilege of unlading vessels at other places than the port of entry, collectors will report the case by letter or telegram to the Department for instructions. If the application is made by telegram, the expense will be borne by the parties interested in the vessel or cargo.

CHAS. J. FOLGER, *Secretary*.

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# THE COMMERCIAL CODE OF RUSSIA.

(*Continued.*)

## CHAPTER IV.

### *On the Hire of a Master of a Ship or Vessel.*

### SECTION I.

### *On the Making and Ratification of the Contract.*

879. The person who is placed in charge of a ship for a stipulated payment or a definite part of the profits received is called the master.

Note.—Every thing in this and the following Articles concerning (*korabelshtchiks*) masters of ships, is applicable to (*sudovshtchiks*) masters of other sea-going vessels.

The master is the legal representative of the owner of the vessel, having the right to protect and defend judicially the interests of his "owners of vessels" and of the owners of the cargo confided to him, without special authorization. (Decision of the Directing Senate, 20th November, 1880, in the case of Walfhill.—Nosenko's Collection, V. 5, Pt. 1.)

880. The choice of a master rests with the owner; but if the vessel belongs to co-owners, their common consent is necessary for the appointment of a master.

881. Every master is bound to have, and on his appointment, produce, a written license certifying his skill and good conduct.

882. If an officer retired from, or serving in, the fleet, wishes to become master of a merchant vessel, and obtains permission from the highest authority to do so; he is, on appointment, bound to conform to all the regulations to which masters of merchant vessels are subject.

883. The owner or owners of a merchant ship on the appointment of a master selected to command it are bound to make a contract in writing with him.

884. A person who charters a ship from the owner, so as to have the direct control of it, is under the same obligation.

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885. The master (of a ship) is not forbidden to have an interest in the ship's cargo.

886. A contract for the appointment of a master is concluded:—(1) on the basis of the general laws concerning a contract of personal hire; (2) by virtue of special regulations concerning mercantile navigation, and with the observance of the rights and obligations defined by them; (3) in accordance with particular conditions pre-arranged and accepted by both parties.

887. A contract for the appointment of a master is drawn up according to the prescribed form, and is signed by both parties. In it should be mentioned and described with necessary detail all essential and particular conditions:—(1) What authority is confided to the master on the basis of the laws concerning mercantile navigation over the ship and over those on board it, and over the goods loaded in it; (2) what pay is he to receive; (3) how much profit is allowed him, *i.e.*, cargo money, or percentage on freight, or passage money for passengers on board the ship or for goods which the master takes in the cabin; (4) the extent of his power with regard to expenditure and saving; (5) what discretion is left him as to the disposal of the ship, with regard to voyages, letting the ship on hire, &c.

888. A contract concerning the engagement of a master is drawn up in duplicate, one copy being kept by the owner and one by the master.

889. A contract concerning the engagement of a master is completed by registration by a broker in his book.

## SECTION II.

### *Of the Duties and Liabilities of a Master towards the Shipowners.*

890. By virtue of his engagement a master is legally responsible and liable for the vessel under his command, and also for the goods or cargo taken on board it, and in case of damage or loss, caused by his default, is bound to make it good.

891. The master should carefully examine the condition of the vessel entrusted to him, to see:—(1) If the vessel is staunch; (2) if it is well caulked above and below water to prevent any leakage; (3) if the pumps are in proper order; (4) if the masts, ropes, sails,

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anchors, cables, etc., are fit for the voyage undertaken; (5) if the tackle, hooks, and other gear for loading and discharging goods or cargo are good and strong.

892. If a master undertakes on his own responsibility (the command of) a vessel with all its appurtenances, and does not make an examination of it in order to satisfy himself that everything is in proper order and ready for the voyage undertaken, in such case each defect [inexactitude] is made good at his expense.

893. When in the locality of the abode of the owner of the ship or of his fully authorised agent, a master has no right to incur expense for the repair of the ship, or to purchase sails, cables, anchors, and other appurtenances without his consent; neither has he a right to treat [make a bargain] concerning the voyage undertaken, without previously obtaining their consent.

894. A master is bound to exercise all possible skill, diligence, and attention. In case of damage or loss happening to the vessel in consequence of the master's want of due care and skill, or negligence, he is bound to indemnify the owners of the vessel not only for all the losses and expenses thus brought upon them immediately through him, but also for those, which the owners of the vessel, on the basis of the laws concerning mercantile navigation, pay to other persons, and is precluded from going to sea* until he receives a fresh certificate of the acquirement of sufficient knowledge for the performance of the duties of a master.

895. In no case and under no pretext, not even that of the most extreme danger, should the master abandon the ship, but he is bound to preserve and defend it at all hazards. If in case of danger he does not take, at the proper time, all measures depending on him for the safety of the crew, vessel, and cargo, and any misfortune result from this, he is punishable under Art. 1280 (1866 ed.) of the Penal Code. If the master leaves his own or another vessel in danger, or if, when the people on board the ship are obliged to abandon it for their safety, the master leaves the vessel before all others do so, he is punishable under Arts. 1225-1227 of that Code.

* So in the Code, but it must mean "going to sea in the capacity of master."

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896. A master is bound to use all measures depending on him to avoid all sorts of danger from fire and water, from thieves and [pirates], and from all accidents, foreseen and unforeseen.

897. A master is bound to take particular care that water which comes into the vessel is pumped out in due time, and before it rises so far in the hold as to damage the goods or provisions; for in such case all damage and loss caused by the negligence of the master, mate, or carpenter, is charged against their pay.

898. The master must not leave the ship during the voyage, even in case of extreme necessity, without having made due arrangements and handed over the command of it to the mate, under penalty of a money fine, or punishment on the basis of Art. 1224 of the Penal Code (1866 ed.).

899. The master is bound to take care that at all times, whether at a quay, in a port, in a roadstead, or at sea, there is a constant guard or watch kept on board the ship of a sufficient number of men under proper command.

900. When the ship is at a quay or in a port or roadstead the watch consists of a fourth or sixth part of the hands; but when it is on the seas, of one-half of the number of hands on the vessel.

901. When a ship is being loaded or unloaded, the master and seamen under him ought to see that on the completion of work all the hatchways and cargo ports (if any) of the ship are closed, and the ports or portholes fastened; the watch, on being relieved, should see that the openings or portholes are closed, that no damage or loss [detriment] may be sustained by night by theft or otherwise.

902. If, during the stay of a ship in a roadstead, or at anchor, or at moorings, in a town, port, or harbour, the master allows more than one-half of the crew to go on leave at once, and any casualty occurs to the ship or cargo, or damage or loss to the ship, goods, or provisions; in addition to the fine, defined by Art. 1242 of the Penal Code (1866 ed.), the master is bound to pay for the damage or loss caused by his carelessness or negligence.

903. On the arrival of a ship in a foreign town, port, or harbour, the master is bound to present himself immediately to the resident Russian Consul in that place, and show him all the documents and

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papers in the order explained below, and he should make himself acquainted with the local port or harbour regulations of that town, the laws and customs touching mercantile ships, and observe them in all details.

904. Wherever there is a quarantine, custom-house, or embargo, the master is bound to carry out without dispute everything that the quarantine, customs' and other like regulations require in all details.

905. The master is bound to observe in detail in all ports, all orders with regard to loading ballast in a place set apart for it, and for a breach of these orders is liable to a fine.

Note.—The rules concerning loading ballast on board merchant vessels in Russian ports are appended to this Art.

(For Appendix see end of Code.)

906. A master when at sea should have with him the laws concerning mercantile navigation.

907. The master of a merchant vessel must salute Russian war ships, frigates, and vessels at sea, as well as in port and everywhere he meets them. On the arrival of a Russian war ship, frigate, or vessel, in the place, harbour, or roadstead, where there is a Russian merchant vessel, the master having hoisted the ensign, must go on board the war ship and give its commander a written report of the name of his ship, the place whence he sailed and whither he is bound, to and from whom it is consigned or addressed, with what cargo, what is the number of hands on board the vessel and of what nationality they are.

908. The master is bound to take a conductor (local pilot) or lodesman [coast pilot] in every place, where the laws, customs, or necessary caution require it.

909. If through self-confidence or for any other insufficient reason, a master, on arriving at a channel (or coming into pilotage waters) do not take a local or coast pilot, or having taken one, will not conform to his instructions and arrangements, and he (the local pilot) withdraws from the conduct of the vessel, the master is responsible for all the consequences whatever they may be.

Note (Supt. of 1876).—If masters of merchant vessels bound from

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St. Petersburg to Kronstadt, or from Kronstadt to St. Petersburg, when their vessels, during low water, draw more than the water on the bar, in spite of the warning of the commanders of guard boats and of lighthouse boats, take it upon themselves to follow the leading marks without lightening their ships and without coast pilots, the commanders of the guard boat are authorised to detain such vessels at anchor, and in case of disobedience to inflict a fine on the masters, as laid down in Art. 1243 of the Penal Code, for the benefit of the widows and orphans of coast pilots.

910. When a ship suffers damage through the default or want of skill of coast pilots who have taken charge of it, the master is bound to claim from them complete indemnification for the loss, and recover it by law.

911. A master is bound to keep a faithful and regular account :— (1) Of the money he receives from the owner, or owners, of the ship ; (2) of the freight and profits he receives in foreign places ; (3) of the money he sends to the owner, or managing owner, and also of what he borrows on their account ; (4) of the expenses incurred for the ship, with a detailed account of the items of expenditure, and also of the issue of provisions.

912. In case of stress of weather, pursuit by the enemy, or insufficiency of provisions, the master may put into the nearest port. If in such a case he has no money with him, nor letters of credit, nor credit for obtaining the necessary provisions or for repairing or refitting the ship and rigging, he may borrow money on the bottomry of the ship or vessel itself, on the basis of the regulations shown below in Arts. 1057-1062.

913. On the completion of each voyage the master is bound to present to the owner or managing owner the necessary report of all his actions relative to the management of the ship entrusted to him, and also the books, accounts, and receipts, and correctly settle accounts with him, before receiving payment.

914. Should the master appear to be dishonest, dishonourable, or unskilful, or be discovered in irregularities contrary to the contract the owner or owners of the ship may dismiss him on the discharge of the goods for which he signed the manifest.* If the master who

* Lit. cargo list.

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is discharged has a share in the goods or cargo,* the owner or owners are not prohibited from buying that share provided they do so at a fair price.

915. If a master wilfully damage a ship or vessel entrusted to him, or goods which are in his charge, or intentionally burn the ship entrusted to him, or another vessel, or intentionally blow his vessel into the air with gunpowder or gas, or sink it, or cause shipwreck to the ship or vessel, or with evil intent desert the ship or other vessel entrusted to him, or sell it for his own profit, or convert it to his own use; in addition to indemnification for the losses caused by him he is liable to punishment on the basis of the rules laid down in Arts. 1221-1223 of the Penal Code (1866 ed.).

916. If a master takes a servant—mariner or other unknown man—on board his ship without the necessary passport or certificate, or take them for a longer period than that mentioned in these passports, he is liable to be fined according to Art. 1231 of the Penal Code (1866 ed.), and, in addition, is responsible for all damage, detriment, or loss which may be caused by this man to the ship or goods. In case of knowingly receiving a criminal on the ship, the master is sentenced to the punishment defined in Art. 317 of that Code.

## SECTION III.

### *On the Responsibility of the Owners for the Acts of the Master.*

917. An owner who engages a master to command a ship without a written certificate (Arts. 853, 881) or without concluding with him a contract drawn up in the prescribed form, and registered in a broker's books (Arts. 883, 889), is liable to the money fine defined in Art. 1722 of the Penal Code.

918. The owner of a steamer or other ship or vessel is responsible for damage and loss caused by the unfaithfulness, dishonesty, or want of skill and knowledge of the master, and for that caused

*There is a provision in almost all Codes for buying out the share of a discharged master in the *ship*. Probably the word *goods* in this Art. may include *ship*, otherwise it appears to confer rather a useless power on the shipowners.



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by want of caution or omission on his part, when the master is insolvent.

The rule concerning the responsibility of the shipowner for the skipper in case of losses when the latter is insolvent, is fully applied to river navigation.—(Decision of Civ. Sects. of Cass. Dept., 1879, No. 385, Tyranoff.)

919. The owner of a ship or other vessel let on charter may, in case of liability incurred under the preceding Art. (918), be freed from all further responsibility by the cession of his vessel, and the monies received by him, or to be received, for freights for that voyage; he is not, in such case, subject to responsibility for damage or losses caused by his master, beyond a sum equal to the value of the ship, with the addition of the freight money received by him, or to be received by him, for that voyage.

920. The owner of a tug steamer or other vessel, sea-going or river, in case of liability falling upon him under the preceding Arts. (918 and 919), is also bound to make good damage or losses caused by the want of knowledge, irregularity, unfaithfulness, or dishonesty of the master to the vessels in tow, without any limit to the indemnifying sum to be paid.

The responsibility, in case of the insolvency of the master, for damage occasioned by his negligence, falls on the owner of the steamer, and not on that person under whose direction or control the vessel in tow happens to be. (Decisions of the Civil Section of the Cassation Depts., 1878, No. 264. Atsiendo Assicuratriche.)

921. Damage and loss resulting from average and shipwreck are charged on the basis of the rules shown below in Part III., Chapters III.-VI. of this book.

## 922. CHAPTER V.

## *On the Hire of Seamen and Sailors.*

### SECTION I.

### *On the Duties of Seamen and Sailors.*

#### I.—*On the Duties of Seamen in General.*

922. The difference between seamen and sailors is that the former have definite functions, and the latter, *i.e.*, the sailors, are bound to perform all the general work of the ship, such as:—Rigging or unrigging, working the helm and sails, mooring the ship, washing

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and keeping it clean, raising the anchor, loading, stowing, and unloading goods or ballast, &c.

923. Experienced seamen and sailors should know how to reef and furl the sails, send up the topmasts and yards, stopper and splice ropes, take the helm, know the points of the compass, heave the lead, and know the marks of the lead-line, and mend sails.

924. Among the seamen, duties are specially defined for the mate and carpenter.

### II.—*On the Duties of the Mate.**

925. The duties of the mate consist of the following :—(1) To navigate the ship ; (2) to carry out in all details the orders of the master, to assist him in everything, and in his absence from the ship to perform his duties ; (3) to maintain harmony and good order among seamen and sailors, so that there may be no quarrels and disputes among them, and that they may perform their duties, and to see that they receive their rations properly ; (4) to be careful about the cleanliness of the hold for the stowage of cargo ; (5) to take on board quickly and stow in necessary order the goods which are to be loaded in the ship ; (6) to keep a minute and correct register of the goods taken on board the ship, with the marks and number of packages, and the part of the hold where each of them is placed or stowed ; (7) on taking goods on board the ship to give to the person commissioned by the merchant to hand over the goods, summary, and list, a correct receipt † stating the reception and condition of the goods which is to be returned to him on delivery of the goods and summary ; (8) to enter the summary in his register or journal ; and (9) to take care that the goods taken be not damaged during the voyage.

926. The receipt of the mate in case of a claim is as necessary in legal proceedings as the summary or list of cargo.

927. The mate keeps a correct daily register or journal of all

* The word here translated "Mate," is literally Pilot. *See* note to Art. 854.

† From this and the next Article it appears that for practical purposes the mate (pilot) and not the master signs Bills of Lading in Russian ships, or that the "mate's receipts" are the usual form of Bill of Lading.



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events on board the vessel, in harbour as well as at sea, and notes in it :—The wind, weather, reckoning of course, the position of the vessel at mid-day, observation of latitude, sun's amplitude, variation of the compass, &c., also the making and shortening of sail, and where and how long and in what port, roadstead, or place, and whether at anchor or alongside the shore, the ship lay, in order that in every case it may be shown that no time was lost on board the ship and that the journey and voyage was continued with all possible care and haste.

928. The mate is subordinate only to the master, and during the voyage should not be absent from the ship at the same time as the master, except in case of extreme necessity.

### III.—*On the Duties of the Ship's Carpenter.*

929. The carpenter must see that the ship is sound and staunch, that the decks, sides, and topworks are well caulked, and that there are no leaks.

930. The carpenter takes great care that the pumps are good, the boxes properly leathered, and all the pump fittings in good order.

931. Before a ship goes to sea, or on any occasion when it appears necessary, the carpenter should make an inspection of the masts, yards, steering gear, and capstan,* to see if the wood is sound and in good condition, and make a report of it to the master.

932. As soon as all the goods are stowed on board the vessel, he should secure the hatchways and cover them with tarpauling.

933. The carpenter should diligently measure the water in the ship (*i.e.*, sound the well), and be careful that it is pumped out in due time, and before it accumulates in such quantity as to cause damage to the goods or cargo. As to measures necessary to be adopted in this case he immediately gives information to the master. For non-fulfilment of this duty, without† regard to the

* *i.e.*, the machinery for weighing anchor.

† The text as given above is literally correct, but, probably, the following paraphrase more nearly expresses the meaning :—"The carpenter is responsible for the execution of this duty without receiving a direct order on each occasion."

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order of the authorities of the ship, he is liable to have two days' pay stopped. When, in consequence of this negligence, the ship or cargo suffers any damage, he is, in addition to the indemnification for damage or loss caused, liable to the punishment defined in Art. 1259 of the Penal Code (1866 ed.).

934. The carpenter is subordinate to the master and mate, like all the other ship's officers.

## SECTION II.

### *Of the Contract for the Hire of Seamen and Sailors.*

935. The master himself engages the mate, carpenter, boatswain, cook, and other seamen and sailors in such numbers as he considers necessary, and makes a written contract with them.

Note (Supt. of 1879).—The Russian Steam Navigation and Trading Company and also the Archangel *Murman* Steam Navigation Company are authorised to substitute, for the written contracts with the men of their crews, account books, on condition that such books be compiled with indication of the conditions shown in Art. 938, and that specimens of such account books be presented for the sanction of the Ministry of Finances previously.

936. A master who ships a mate on board a vessel under his command without the certificates prescribed by Art. 853, or without a contract in writing with him according to the established form, registered at a broker's, is liable to a money fine of fifty roubles.

937. The contract between the master, and the seamen and sailors hired by him contains the conditions on which the latter consent to ship on board the vessel and complete one or more voyages, and to perform with necessary punctuality the duties and work defined for each, the stipulated payment and maintenance on such terms as are defined by law. In this contract the master binds himself in all things necessary to its performance on his part.

938. A contract for the hire of seamen * [hands] for a ship or

* [Literally, *servants*.]

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vessel is drawn up according to the established form appended to this Art.

In it must be stated :—

1. The name of the master and description of the ship, also the name of each individual seaman, with a statement of the duties for which he was hired and the name of each sailor.*

2. The places from and to which the ship is to sail, and by what sea route.

3. The wages agreed upon, opposite the name of each sailor, in words and figures, with a statement whether (they are) monthly or otherwise.

4. The duty of the master of the ship or vessel to supply the sailors with the maintenance laid down by law.

5. The duty of the sailors to perform everything that the law prescribes for the duties of each, and to obey the master without dispute, and to indemnify, by a deduction from the stipulated pay, damage or loss caused by their carelessness.

939. It is left to the discretion of owners or masters of Russian coasting vessels, to make, with the sailors and hands generally taken on board those vessels, contracts in writing conformably with the preceding Art. (938), or to substitute for them conformably with the Regulations for Manufactories and Workshops, account sheets issued to these persons and signed by them, containing all the conditions set out in Art. 938.

940. On these sheets (Art. 939) each payment must be endorsed, also how much, according to the conditions, should be demanded and withheld from the labourer for causing damage [loss] to the owner or master of the vessel. In addition the owner or master is bound to keep a separate book for registering the deductions and payments made by him to the hands [crew].

941. Account sheets and books are accepted as evidence in the settlement of disputes between the owners of vessels and crews.

942. (Supt. of 1876).—Account sheets used in place of contracts

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* For the specific difference between seamen and sailors in Russia, *see ante*, Art. 922.

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between masters and crews are subject to stamp duty (Tax Regulations Art. 2, app. supt.)

(These Regulations being liable to be altered at any time, are not printed here.)

943. No master or owner of a vessel can ship people on board his vessel, who have not got legal passports or proper permits, nor can he contract with them for a period longer than that shown in those passports.

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## CORRESPONDENCE.

### SUMNER'S METHOD IN LOW LATITUDES.

*To the Editor of the "Nautical Magazine."*

DEAR SIR,—The proposed method of finding a ship's position at any hour of the night, by Mr. C. S. Hudson, in your April number, has induced me to offer a few remarks on the subject, which may interest some of your readers.

Some years ago I came across a letter in *Naval Science* by Mr. J. B. Harbord, the author of an article on Curves of Position in the January number, 1874, of that magazine, in which he fully discusses the method proposed by Mr. Hudson, namely, laying off the position of a ship on the chart, by the intersection of two arcs of circles described by using the positions of the objects observed as centres, and their zenith distances as radius. I was so struck with the simplicity of the method that I put it in practice the first opportunity I got in low latitudes, with perfect success.

It frequently happens during the S.W. monsoon in the Indian Ocean, with the sun's declination nearly the same as the lat., that the meridian observation is lost during cloudy weather, owing to the rapidity of the sun's motion; at such times too, the ex-meridian, unless taken within a very few minutes of the noon is almost useless. Doubtless many of your readers have missed the usual noon latitude at critical times, such as making the coast of Ceylon, or Cape Gardafui, where strong and uncertain currents prevail during the S.W. monsoon, through not

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catching the sun just on the meridian, and consequently have suffered all the anxiety of having to run on without a reliable knowledge of their latitude. I have frequently found both lat. and long. from two observations of the sun, a few minutes from the meridian, when he was not visible during the rest of the day owing to the thick monsoon clouds which only cleared away at times near the zenith. The observation by stars is even more simple when worked by this method, as the declination does not change, and stars can be chosen whose position will give the best results. The latitude alone can be easily found by two observations of a star passing near the zenith, say from 4° to 11°, with the assistance of a common watch which can be relied on to keep fairly good time for an hour or so. In this operation it is only necessary to note the time by watch of the first observation, and after the star has changed its bearing sufficiently observe another altitude noting the time as before, prick off a point in lat. equal to the declination of the star on the chart, then with the first position of the star as centre and the true zenith distance as radius describe a circle. With the difference of time between the observations as shown by watch, converted into arc, prick off a second point on the chart, to westward of the first, using the difference of time as diff. long. in lat. equal to star's declination, with this point as centre and second zenith dist. as radius describe another circle, the two circles will cut each other in two places, one of which, easily found by the star bearing to N. or S., will be the lat. of the ship. If the ship has changed her place in the interval between the observations it must be allowed for in the usual way.

This is by far the simplest method of finding the latitude from two observations I know of; and, in the case of a star, it is entirely independent of longitude or sidereal time. Of course it is confined to low latitudes, nothing beyond 12° or 15°; but with a terrestrial globe, as suggested by Mr. Hudson, I see no reason why it should not be of use in almost any navigable latitude.

There is, unfortunately, an opinion prevalent among seamen that Sumner's method by the sun is of little value in low latitudes, except to find a line of position from the a.m. or p.m. sight, as the sun's bearing does not change sufficiently, except near noon, to

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give a good cross. With the above method, the position can be found in practice with as much accuracy as under the more favourable circumstances.

The A and B tables of Admiral Sir Leopold Heath are in constant use on board of mail steamers, and many officers use them for finding the line of position, but as the elements in these tables are only given from one hour to four hours from noon, their use in Sumner's method is somewhat restricted. The extended A and B tables recently brought out by Mr. Blackburn, of the P. and O. Company, in which elements are given from meridian to six hours from it, are of great value in working Sumner's method by altitudes taken near the meridian in low latitudes. I know of no other tables which admit of such extensive use. In addition to the advantage of being available for any hour angle, these tables give by inspection the true bearing of the object, whatever its altitude may be. This is a great help to those who are in the habit of using Sumner when available, as neither Davis's nor Towson's tables give bearings sufficiently near noon to be of use in double altitudes when the objects observed are very high.

Sumner's method, in all its applications, is so thoroughly well discussed in the pages of the *Nautical Magazine*, as to leave nothing to be desired, but so far as I am aware this application of it to very high altitudes has seldom been put in practice.

I am, dear Sir, yours obediently,

T. S. A.

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## RECENT IMPROVEMENTS IN SHIPS' SIGNAL LIGHTS.

*To the Editor of the "Nautical Magazine."*

Sir,—The article in your June issue on "Recent Improvements on Ships' Signal Lights," by Mr. J. Kenward, should, I think, draw the attention of interested shipowners and others to the fact that the ordinary signal lights and appliances for exhibiting them as at present in general use on board most vessels are open to considerable improvement, especially as regards the mode of exhibiting side-lights; also, that although the signal lamps may be of first-class

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manufacture their illuminating power is frequently marred by the use of common petroleum.

Shortly after the introduction of turrets for side-lights, about ten years ago, I advocated the general building of enclosed structures for side lights which, in my opinion, are practicable in all vessels of any size; especially did I suggest them for steamers for obvious reasons.

All steamship men know that when a steamer is taking water over the bows how difficult it is to send a masthead lamp up or down. There are many steamers which, having polemasts, can and do carry their masthead lamp on a forked frame fixed at the masthead. In such steamers it would be a simple matter to construct a suitable house on the deck beneath the forked frame and from a trapdoor on the top of the house up to the forked frame have two fixed or portable wire jackstays for the lamp to run upon. With such an arrangement and the needful haul-yards, the masthead lamp could be more promptly attended to (a very desirable thing at all times, but especially so in crowded waters), and with no cause to fear injury to the lamp or to the man or men attending it. I have known cases when, owing to water coming on board, and taking the men off their feet, they with the lamp have been injured. It is hard to lose the services of a man or men, and seriously awkward should the masthead lamp be irreparable on board, and no duplicate.

Mr. Kenward speaks very favourably of mineral sperm as an illuminant. May be that were its superior qualities made known to all shipowners, its greater use would follow. Although the price is more than ordinary petroleum, I presume that steamship companies who use it, not only do so as a superior illuminant for signal lights, but because of its greater safety; also that it can be freely used for lighting up saloons and cabins without partially poisoning the occupants, as is too often the case from the burning of ordinary petroleum.

I believe it would be interesting to many to know why electricity is not used for steamer signal lights. I know of one steamer that had all necessary fittings fixed, but owing to the Board of Trade withholding their sanction, they are not used. This was but a few

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months ago. I may observe that said steamer's saloons and cabins are lighted by electricity.

I am, yours faithfully,

Hull, July 18, 1884. ANTICIPO.

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## CORAL SEA—REPORTED SANDBANK.

*To the Editor of the "Nautical Magazine."*

Sir,—Herein I enclose a "slip" of our report from Cooktown to this port, by which you will find that we have discovered a *sandbank* which is not laid down in the Admiralty Charts.

I am, Sir, your obedient servant,

THOMAS OWEN,
Master, ship *Cambrian Princess.*

Adelaide, 6th June, 1884.

"The *Cambrian Princess* is an iron vessel which, on a former occasion, visited this port, and on her present voyage has been unfortunate enough to arrive two days after her charter day. This untoward circumstance was owing to the adverse winds and weather she experienced throughout the passage of fifty-one days. She sailed from Cooktown on April 12, and having reached a position a couple of miles outside Endeavour River came to anchor till next morning before sailing through the Barrier Reef. On the following day the vessel was got under way, and passing to the N.E. of Lizard Island headed out through the Cook's opening in the Barrier Reef, and hauling on the starboard-tack kept so till midnight before going in stays, so as to give the Osprey Reef a good wide berth. At noon next day found the vessel had been drifted by the current twenty-five miles during the previous twenty-four hours, and, in consequence, as she could not weather the reef kept away to pass about three miles to the northward of it. It was observed the sea did not break over it, but only on the eastern edge, and at the time of passing there were only about 6 or 8 feet water over it, with exception of two or three black boulders, the sight of which was quite formidable, and its position extremely dangerous, especially so on account of the strong current in the vicinity. When in lat. 18° 38′ S., long. 150° 30′ E.,

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during a calm, it was noted the sea was covered with the weed known as Sargassum bacciferum or Sargasso weed. Some good specimens were secured for future reference. On April 21, at 9 a.m., the vessel ran past a sandbank which was not marked on the Admiralty charts. It was in lat. 15° 33′ S., 149° 52′ E. long., and on working up course and distance the corrections put its position as 15° 44′ S., 149° 41′ E. It was about three miles long, with apparently six feet out of water, with no outlying reefs, nor was any discoloured water visible from the masthead. On April 23 sighted Sudeast Island, and on May 4 passed between Frederick and Sumarez Reefs, to the westward of Kenn and Wreck Reefs, the current setting to the N.W. quite over a knot and a-half an hour, but on nearing the coast of New Guinea the force of the current diminished to the third of a knot per hour. The wind continued varying about a point on each side of S.S.E. for quite three weeks, and the battle to the southward with a vessel in ballast trim may be easier imagined than described. It was May 6 before sighting the Great Sandy Island, and on the 8th signalled Cape Moreton, having at that time thick overcast weather and heavy rain. Variables continued, and the overcast weather prevented observations at times; but on May 13 reached Cape Howe, when a strong gale set in from N.W., veering round to W.S.W., with falling barometer and every prospect of heavy weather. The idea of shaping a course through Bass Straits was abandoned, and on the 19th had a gale when off Cape Pillar. Then had coarse weather till sighting Cape Northumberland on May 26. During that day the master reports thirty-one miles of easterly current, and on making a reach to the southward avoided its influence. Finally sighted Cape Borda at midnight on June 1, and having the wind ahead worked up the Gulf and came to single anchor in the offing on Tuesday morning at an early hour."

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## CYCLONE IN THE INDIAN OCEAN, 16TH AND 17TH MAY, 1884.

*To the Editor of the "Nautical Magazine."*

SIR,—Among other vessels which encountered the cyclone of the 16th and 17th May, 1884, which destroyed the Oyster Reef

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Lighthouse and wrecked Akyab, the s.s. *Rajpootana*, Captain J. T. Lewis, R.N.R., was one, and as her experiences during the gale are specially interesting to seamen, I venture to send you an account of the part she played, which Captain Lewis has kindly placed at my disposal.

The s.s. *Rajpootana* was bound from Calcutta to Rangoon and was making a direct course from the Eastern Channel Light-vessel to the Alguada Lighthouse, when at daylight on May 16th she encountered a fresh south-easterly gale with heavy sea which gradually increased. At noon she was in lat. 19° 23′ N., long. 89° 47′ E. The wind gradually hauled from S.E. to E.S.E. and east, blowing a heavy gale from east at 6 p.m. with a heavy S.E. sea. At that time it was apparent to the captain that he was in the vicinity of a cyclone, so he went half-speed and observed the weather and shift of wind which rapidly flew round to E. by N. E.N.E. till at 10 p.m. it was N.E., and at 11 p.m. N.N.E., the barometer falling all the time. At 11 p.m. there was a heavy gale with terrific squalls and a high sea running, the ship was kept away S.W. by W. and gradually kept more to the southward as the wind hauled to the N. and N.W. At daylight on the 17th May, after a very dirty night, and finding it very difficult to keep the ship from coming to, Captain Lewis got 10 gallons of cocoanut oil, put it in a double gunny bag and then placed it in the weather ash shoot, which in this ship is an iron funnel standing on the deck just abaft the bridge and running through the ship's side like a large scupper. He describes the effect as very marked, the sea was previously a confused mass of cross seas which tumbled on board in tons, and as she was running before the wind heavy seas came breaking over the stern, but as soon as the oil was used it took the breakers entirely away, leaving only crestless waves, and as the ship went along there was a track of comparatively smooth water left in her wake, a narrow streak, with breaking seas on both sides. By this means the vessel was enabled to steer steady, and no more seas broke over the stern. The ten gallons of oil lasted for about four hours.

After getting well clear of the centre of the cyclone the ship was gradually kept on her course, making a fair wind of the

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southern portion of the cyclone. I append a memo of shifts of wind and barometer readings during the continuance of the cyclonic gale :—

| | | Wind. | Bar. | Ther. | |
|---|---|---|---|---|---|
| May 16th | 4 a.m. | S.E. | 29.72 | 86 | |
| ,, | 8 ,, | E.S.E. | 29.74 | 87 | |
| ,, | noon | E.S.E. | 29.74 | 85 | Lat. 19° 23′ N. Long. 89° 47′ E. |
| ,, | 4 p.m. | East. | 29.57 | 85 | |
| ,, | 8 ,, | E. by N. | 29.57 | 84 | |
| ,, | 9 ,, | E.N.E. | — | — | |
| ,, | 10 ,, | N.E. by E. | — | — | |
| ,, | 11 ,, | N.E. | 29.50 | — | |
| ,, | 12 ,, | N.N.E. | 29.47 | 82 | |
| May 17 | 1 a.m. | N. | 29.40 | — | |
| ,, | 2 ,, | — | 29.38 | — | |
| ,, | 3 ,, | N. by W. | 29.36 | — | |
| ,, | 4 ,, | N.W. by N. | 29.36 | 84 | |
| ,, | 5 ,, | — | 29.38 | — | |
| ,, | 6 ,, | N.W. | 29.41 | — | |
| ,, | 7 ,, | N.W. by W. | 29.44 | — | |
| ,, | 8 ,, | W.N.W. | 29.47 | 84 | |
| ,, | 9 ,, | W. by N. | 29.55 | 84 | |
| ,, | 10 ,, | W.N.W. | 29.59 | 85 | |
| ,, | 11 ,, | ,, | 29.59 | 86 | |
| ,, | noon | ,, | 29.60 | 86 | Lat. 11° 56′ N. Long. 90° 42′ S. |
| ,, | 1 p.m. | W. by N | 29.62 | — | |
| ,, | 2 ,, | W. | 29.65 | 89 | |
| ,, | 3 ,, | — | 29.65 | — | |
| ,, | 4 ,, | W.S.W. | 29.68 | 87 | |
| ,, | 8 ,, | S.W. | 29.75 | 84 | |
| ,, | 12 ,, | Southerly | 29.84 | 86 | |

I am, yours faithfully,

W. E. H.

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## STELLAR NAVIGATION.

*To the Editor of the "Nautical Magazine."*

SIR,—In your April issue there appeared a paper by Mr. Hudson of the Union Cape Mail Service, the first part of which bore on finding a ship's position by "Sumner lines" of stars. This certainly is one of the very best ways of "fixing," and in the writer's opinion there is *no* problem for this purpose so useful, accurate, and simple.

I must, however, beg to differ *very* much from Mr. Hudson about the plan of using night glasses with a sextant. Let any of your readers try to get a good sight of the sun near noon (when it has very little motion or altitude), using his binoculars instead of the telescope of the sextant, and he will find it an exceedingly difficult if not impossible task. How then can one hope to secure reliable sights of rapidly moving stars, which are, of course, best suited to this problem. Again, if you use your binoculars, you *must* set your instrument to an arc, and try to catch the star exactly at that altitude. No one who has tried will need to be told that with the *sun* (especially when the ship has any motion) using an ordinary telescope, this is next door to impossible to do accurately. Now what chance has one with a star, when you can almost be sure the line of sight is *not* parallel to the plane of the sextant. Clouds too may intervene, in fact it seems that obstacles to obtaining correct sights by this method are indeed very many.

An inferior star telescope is most certainly worse than none at all, but the value of a really good one is not easily overestimated. With a good star telescope, decently adjusted, and fixed in a proper manner to a good sextant, with well-silvered glasses, really reliable sights can be obtained at almost any hour of any fine night. For a long time the writer has used one of Messrs. Lilley & Son's (London Street, E.C.) improved star telescopes, and can testify to the very excellent results he has been able to get on many a dark night by its aid. If I remember rightly its cost, including fitting to the sextant, was only 35s., which everyone must allow to be very moderate for the work it performs. Captain Lecky in his "Wrinkles" (which *every* officer ought to possess, as it contains

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more information which will be of service to him than any other three books I know of) also mentions these telescopes as having afforded him satisfaction, and I am glad to confirm the testimony of such an able man.

In conclusion, I would advise all your readers who do not use the stars to *try* them, for they will not only not regret it, but will, I am sure, be highly pleased at the splendid results which they will undoubtedly attain after a little practice.

Any one anxious to get a knowledge of Stellar Navigation will probably learn more about it out of Captain Lecky's "Wrinkles," than he could out of any other book, or books, at present published.

I am, Sir, yours very truly,

WILLIAM C. BOYNES.

Malta, July 14th, 1884.

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## BOOKS RECEIVED.

*Notices to Mariners* and *Hydrographic Notices* (British and Foreign) are not so abundant as usual, but the few are important. The July map of the U.S. *Bureau of Navigation* is to hand, we hope it will not be the last of the kind, but that Congress has been wise and granted the supplies. It is well-known that most of our steam lines preserve approximately the "Lanes" in crossing and re-crossing the Atlantic; it has been proposed that the cargo steamers do the same, to avoid the chances of collision.

The books, pamphlets and papers on our table are as follows:—

*Going to Sea* (Philip and Son: London), is the substance of a lecture delivered on board the school frigate *Conway*, by Capt. John Macnab, R.N.R., and Examiner to the Liverpool Local Marine Board. After a comparison of the relative prospects of the merchant sailor and the merchant's clerk, to the manifest advantage of the former, the author carefully runs through the obligations and duties incumbent on him who hopes eventually to command a fine ship: the tale is told tersely, well and to the purpose; especially should every lad carefully

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study and constantly bear in mind the brief instructions on the last two pages, which conclude by advising him *never to desert*, and always to *be the gentleman and the sailor.*

Newton's *Guide to the Board of Trade Examinations of Masters and Mates of Sailing Ships and Steamships* has reached a seventh edition, and is considerably enlarged, as well as improved, embodying all that is necessary to get the Board of Trade Certificate for any grade; the illustrations are good and to the point. The *Thirteenth Report of the Melbourne Sailors' Home*, and *Eighth Annual Report of the Victorian Shipwreck Relief Society* speak of prosperity and success in the good cause undertaken, and show an efficient balance sheet.

*Meteorological Charts of the North Atlantic Ocean for each of the twelve months.* Published by the United States Hydrographic Office. Compiled from a collection of data, embracing Maury's Pilot Charts and the Meteorological Charts. This series of charts is far more elaborate, and would involve far greater labour than the Pilot Charts noticed in our last number. The charts give the true direction and mean force of the wind, the proportion of calms, variables, rain, fog, moderate and heavy squalls, and gales, the mean height of the barometer, the temperature of the air, the reading of the wet bulb and of the sea surface temperature, and the daily mean ranges of these instrumental observations.

The system adopted embodies the experience of a large number of navigators in respect to weather at sea, and for exhibiting the data the ocean is divided into five degree "squares" upon twelve Mercator Charts, a chart for each month. The style of exhibiting the data is very similar to that adopted by Captain Toynbee in the volume of charts published by the Meteorological Council for the Atlantic equatorial district. We are disposed to think that the system is too elaborate, and valuable as this kind of work is, we are inclined to ask how the data are combined, and whether meteorology, even now, is not too young to give satisfactory results on all its points of observation. We notice an almost complete absence of gales in the month of October, which seems to show that there is an absence of data on this head, and not that gales do not blow, although the ordinary navigator might



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be driven to the latter conclusion. We also notice what would seem to be a want of skilled manipulation in dealing with the observations, for in several instances the means of the wet bulb thermometer are given higher than those of the air thermometer, an anomaly which cannot exist in nature, and which is doubtless due to the mean of all the air temperature observations being taken for the air temperature mean, and the mean of all the wet bulb temperature observations for a wet bulb mean, regardless of whether the observations were coincident or not; this system would necessarily vitiate all the wet bulb means given on the charts, the disagreement which is to be noticed when comparing the results of the various elements for one five degree square with those adjacent to it suggest grave doubts as to whether this method of determining averages is not open to serious objection.

*Revue Maritime et Coloniale* (Paris), for July, gives an illustrated paper on the Tunisian fishery, with a description of the boats employed; a new method of using a steamer's lights to avoid collisions is proposed by Captain Charpy; the article on geometrical methods is continued; and a paper on the Korea gives the latest information on that comparatively unknown part of the world. *Annales Hydrographiques* (Paris), first part for 1884, is full of excellent nautical and hydrographical information, especially in relation to soundings and magnetic elements. In *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft VI., Dr. Borgen discusses the harmonic analysis of tidal observations, and Dr. Peters writes on rates of chronometers as affected through magnetic influence. In *Mittheilungen aus dem Gebiete des Seewesens* (Pola), Nos. V. and VI., Professor Peterin writes on the Ex-meridian problem, and Professor Gelcich discusses graphic methods of finding the position. *Boletin de la Sociedad Geográfica de Madrid* (Madrid), for May, is chiefly devoted to the progress of the Geographical Society.

We have also received the current numbers of *Rivista Marittima*, Rome; *Van Nostrand's Engineering Magazine*, New York; *Rivista della Marina Mercantile*, Trieste; also the numbers of *Revista Maritima Brazileira*, Rio de Janeiro, December last to May inclusive.

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We are in receipt of the latest numbers of *Hansa; Das Schiff; Le Yacht; L'Avenir Militaire;* the *New York Maritime Register;* the *Nautical Gazette* (U.S.); the *Marine Journal of Cincinnati;* the *Scientific American; The Dial* (U.S.), which is said to be the recognised authority in the financial and commercial markets; the *San Pedro Shipping Gazette* of the West Coast of America.

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## SHIPBUILDING, 1884.

### Iron and Steel Steamers Built in the United Kingdom and Registered as New British Ships.

| Ports where built. | No. first three months. | Gross tonnage first three months. | No. second three months. | Gross tonnage second three months. |
|---|---|---|---|---|
| Clyde Ports | 27 | 41,563 | 38 | 46,274 |
| Tyne Ports | 28 | 38,777 | 27 | 35,796 |
| Sunderland | 27 | 45,222 | 23 | 31,952 |
| The Hartlepools | 6 | 9,415 | 10 | 14,468 |
| Middlesbro' | 5 | 9,761 | 5 | 7,011 |
| Stockton | 2 | 5,587 | 7 | 4,292 |
| Whitby | 2 | 3,175 | 2 | 2,950 |
| Hull | 8 | 9,099 | 8 | 2,435 |
| London | 2 | 116 | 5 | 726 |
| Southampton | 2 | 3,742 | 1 | 122 |
| Liverpool | 1 | 662 | 3 | 2,873 |
| Barrow | 5 | 10,181 | 4 | 4,099 |
| Belfast | 3 | 4,904 | 5 | 3,973 |
| Cumberland Ports | 2 | 1,780 | — | — |
| Aberdeen | 2 | 1,712 | 2 | 1,570 |
| Dundee | 2 | 2,361 | 3 | 3,957 |
| Grangemouth | 1 | 1,161 | 1 | 198 |
| Leith | 1 | 966 | 5 | 11,137 |
| Other Ports | 10 | 2,807 | 21 | 9,331 |
| Total | 136 | 192,993 | 170 | 183,164 |



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## Steel Steamers built in the United Kingdom, and Registered as British Ships.

| Ports where built. | No. first three months. | Gross Tonnage first three months. | No. second three months. | Gross Tonnage second three months. |
|---|---|---|---|---|
| Clyde Ports ... | 8 | 16,521 | 12 | 27,473 |
| Liverpool ... | 1 | 662 | — | — |
| Dundee ... | 1 | 1,403 | 1 | 2,486 |
| Sunderland ... | 1 | 1,774 | — | — |
| Cumberland Ports | 1 | 267 | — | — |
| Leith ... ... | — | — | — | — |
| Hull ... ... | 1 | 1,834 | 2 | 1,074 |
| Barrow ... | 1 | 1,191 | — | — |
| Grangemouth ... | 1 | 1,161 | — | — |
| London ... | 1 | 87 | 2 | 318 |
| Kirkaldy ... | — | — | 2 | 2,284 |
| Tyne Ports ... | — | — | 1 | 1,450 |
| Aberdeen ... | — | — | 1 | 1,062 |
| Poole ... ... | — | — | 1 | 27 |
| Total ... | 16 | 24,850 | 22 | 36,174 |

## Iron and Steel Sailing Ships Built in the United Kingdom, and registered as British Ships.

| Ports where built. | No. first three months. | Gross Tonnage first three months. | No. second three months. | Gross tonnage second three months. |
|---|---|---|---|---|
| Clyde Ports ... | 6 | 11,388 | 11 | 19,795 |
| Belfast ... | 1 | 2,365 | 3 | 2,530 |
| Southampton ... | 2 | 4,645 | 2 | 4,852 |
| Stockton ... | 1 | 7,745 | 2 | 3,878 |
| Liverpool ... | 2 | 4,525 | 5 | 10,734 |
| Sunderland ... | — | — | 1 | 1,243 |
| Cumberland Ports | — | — | 1 | 1,849 |
| Leith ... ... | — | — | 1 | 1,040 |
| Bristol... ... | 1 | 974 | — | — |
| Tyne Ports ... | — | — | 1 | 1,364 |
| Whitby ... | — | — | 1 | 1,867 |
| Other Ports ... | — | — | 8 | 547 |
| Total ... | 13 | 25,642 | 36 | 49,699 |

Of these vessels, one built at Belfast in the first quarter was of steel, and one steel ship was built at Workington, and one at Glasgow during the second quarter.

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*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | London Bridge. A.M. | London Bridge. P.M. | Hull. A.M. | Hull. P.M. | North Shields. A.M. | North Shields. P.M. | Leith. A.M. | Leith. P.M. | Devonport. A.M. | Devonport. P.M. | Dover. A.M. | Dover. P.M. | Weston-super-Mare. A.M. | Weston-super-Mare. P.M. | Liverpool. A.M. | Liverpool. P.M. | Greenock. A.M. | Greenock. P.M. | Queenstown A.M. | Queenstown P.M. | Kingstown. A.M. | Kingstown. P.M. | Londonderry. A.M. | Londonderry. P.M. | Brest. A.M. | Brest. P.M. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| F | 1 | 8 51 | 9 29 | 1 21 | 1 54 | 10 58 | 11 33 | 9 52 | 10 27 | — | 0 32 | 5 56 | 6 30 | 1 12 | 1 49 | 6 19 | 6 58 | 6 52 | 7 28 | — | 0 14 | 6 14 | 6 48 | 3 33 | 4 5 | 11 14 | 11 52 |
| S | 2 | 10 9 | 10 45 | 2 27 | 3 0 | — | 0 7 | 11 0 | 11 32 | 1 9 | 1 47 | 7 5 | 7 41 | 2 26 | 3 3 | 7 34 | 8 8 | 8 4 | 8 40 | 0 50 | 1 27 | 7 21 | 7 58 | 4 33 | 5 2 | — | 0 28 |
| S | 3 | 11 19 | 11 53 | 3 33 | 4 8 | 0 39 | 1 7 | — | 0 1 | 2 24 | 2 58 | 8 15 | 8 44 | 3 39 | 4 12 | 8 39 | 9 6 | 9 12 | 9 40 | 2 1 | 2 31 | 8 28 | 8 52 | 5 25 | 5 47 | 1 0 | 1 28 |
| M | 4 | — | 0 20 | 4 31 | 4 56 | 1 32 | 1 55 | 0 26 | 0 49 | 3 28 | 3 56 | 9 9 | 9 33 | 4 42 | 5 10 | 9 29 | 9 51 | 10 6 | 10 30 | 2 59 | 3 25 | 9 19 | 9 41 | 6 9 | 6 31 | 1 53 | 2 16 |
| Tu | 5 | 0 45 | 1 7 | 5 18 | 5 38 | 2 17 | 2 37 | 1 11 | 1 32 | 4 21 | 4 44 | 9 56 | 10 17 | 5 35 | 5 58 | 10 11 | 10 30 | 10 53 | 11 14 | 3 47 | 4 8 | 10 6 | 10 24 | 6 52 | 7 12 | 2 36 | 2 55 |
| W | 6 | 1 29 | 1 48 | 5 57 | 6 16 | 2 55 | 3 13 | 1 51 | 2 9 | 5 5 | 5 25 | 10 38 | 10 58 | 6 20 | 6 41 | 10 49 | 11 7 | 11 35 | 11 55 | 4 28 | 4 47 | 10 41 | 10 58 | 7 31 | 7 50 | 3 14 | 3 33 |
| Th | 7 | 2 8 | 2 24 | 6 35 | 6 54 | 3 30 | 3 47 | 2 27 | 2 45 | 5 45 | 6 4 | 11 18 | 11 38 | 7 1 | 7 20 | 11 26 | 11 45 | — | 0 14 | 5 6 | 5 25 | 11 15 | 11 33 | 8 8 | 8 25 | 3 52 | 4 10 |
| F | 8 | 2 41 | 2 59 | 7 13 | 7 32 | 4 5 | 4 23 | 3 2 | 3 19 | 6 23 | 6 42 | 11 58 | — | 7 38 | 7 56 | — | 0 3 | 0 33 | 0 52 | 5 41 | 6 3 | 11 51 | — | 8 42 | 8 58 | 4 28 | 4 45 |
| S | 9 | 3 17 | 3 35 | 7 50 | 8 8 | 4 41 | 4 59 | 3 36 | 3 54 | 7 0 | 7 17 | 0 17 | 0 36 | 8 13 | 8 30 | 0 21 | 0 39 | 1 10 | 1 28 | 6 21 | 6 39 | 0 9 | 0 27 | 9 14 | 9 31 | 5 2 | 5 20 |
| S | 10 | 3 54 | 4 12 | 8 26 | 8 44 | 5 18 | 5 37 | 4 13 | 4 32 | 7 34 | 7 52 | 0 56 | 1 16 | 8 47 | 9 5 | 0 57 | 1 16 | 1 46 | 2 5 | 6 58 | 7 17 | 0 46 | 1 6 | 9 49 | 10 7 | 5 39 | 5 58 |
| M | 11 | 4 31 | 4 51 | 9 3 | 9 23 | 5 57 | 6 18 | 4 52 | 5 12 | 8 11 | 8 30 | 1 37 | 1 58 | 9 23 | 9 41 | 1 35 | 1 54 | 2 24 | 2 44 | 7 36 | 7 56 | 1 26 | 1 47 | 10 26 | 10 47 | 6 17 | 6 37 |
| Tu | 12 | 5 10 | 5 29 | 9 43 | 10 4 | 6 39 | 7 1 | 5 33 | 5 56 | 8 50 | 9 10 | 2 19 | 2 41 | 10 0 | 10 19 | 2 14 | 2 34 | 3 4 | 3 24 | 8 16 | 8 37 | 2 8 | 2 30 | 11 10 | 11 37 | 6 58 | 7 22 |
| W | 13 | 5 49 | 6 13 | 10 28 | 10 55 | 7 25 | 7 52 | 6 21 | 6 48 | 9 31 | 9 54 | 3 4 | 3 27 | 10 39 | 11 1 | 2 56 | 3 20 | 3 45 | 4 9 | 8 59 | 9 24 | 2 54 | 3 20 | — | 0 9 | 7 47 | 8 14 |
| Th | 14 | 6 39 | 7 7 | 11 25 | mid. | 8 28 | 8 57 | 7 18 | 7 52 | 10 20 | 10 50 | 3 52 | 4 18 | 11 25 | 11 56 | 3 47 | 4 18 | 4 35 | 5 4 | 9 51 | 10 20 | 3 49 | 4 22 | 0 45 | 1 26 | 8 43 | 9 15 |
| F | 15 | 7 35 | 8 8 | — | 0 37 | 9 33 | 10 18 | 8 29 | 9 8 | 11 24 | — | 4 47 | 5 19 | — | 0 30 | 4 53 | 5 32 | 5 35 | 6 10 | 10 55 | 11 34 | 4 57 | 5 34 | 2 9 | 2 52 | 9 51 | 10 32 |
| S | 16 | 8 44 | 9 26 | 1 14 | 1 51 | 10 54 | 11 34 | 9 48 | 10 27 | 0 2 | 0 43 | 5 54 | 6 31 | 1 8 | 1 49 | 6 15 | 7 0 | 6 49 | 7 30 | — | 0 15 | 6 11 | 6 48 | 3 31 | 4 5 | 11 16 | 11 58 |
| S | 17 | 10 10 | 10 50 | 2 28 | 3 5 | — | 0 11 | 11 4 | 11 38 | 1 27 | 2 8 | 7 10 | 7 49 | 2 32 | 3 14 | 7 40 | 8 15 | 8 10 | 8 48 | 0 56 | 1 36 | 7 25 | 8 1 | 4 36 | 5 4 | — | 0 36 |
| M | 18 | 11 29 | — | 3 40 | 4 14 | 0 44 | 1 16 | — | 0 10 | 2 47 | 3 23 | 8 26 | 8 59 | 3 55 | 4 34 | 8 48 | 9 19 | 9 24 | 9 57 | 2 14 | 2 49 | 8 36 | 9 10 | 5 32 | 6 0 | 1 11 | 1 44 |
| Tu | 19 | 0 4 | 0 35 | 4 47 | 5 15 | 1 46 | 2 13 | 0 40 | 1 7 | 3 55 | 4 25 | 9 30 | 9 58 | 5 8 | 5 39 | 9 47 | 10 12 | 10 27 | 10 55 | 3 21 | 3 49 | 9 40 | 10 6 | 6 27 | 6 53 | 2 12 | 2 37 |
| W | 20 | 1 8 | 1 29 | 5 40 | 6 4 | 2 37 | 3 0 | 1 32 | 1 56 | 4 52 | 5 19 | 10 24 | 10 48 | 6 6 | 6 31 | 10 35 | 10 58 | 11 21 | 11 45 | 4 15 | 4 38 | 10 28 | 10 49 | 7 18 | 7 41 | 3 1 | 3 24 |
| Th | 21 | 1 52 | 2 15 | 6 27 | 6 48 | 3 21 | 3 41 | 2 18 | 2 39 | 5 40 | 6 2 | 11 11 | 11 34 | 6 54 | 7 15 | 11 20 | 11 41 | — | 0 8 | 5 0 | 5 21 | 11 9 | 11 29 | 8 2 | 8 21 | 3 45 | 4 5 |
| F | 22 | 2 36 | 2 55 | 7 9 | 7 30 | 4 1 | 4 21 | 2 58 | 3 17 | 6 23 | 6 42 | 11 56 | — | 7 36 | 7 55 | — | 0 2 | 0 29 | 0 50 | 5 42 | 6 2 | 11 49 | — | 8 39 | 8 57 | 4 25 | 4 45 |
| S | 23 | 3 16 | 3 36 | 7 50 | 8 9 | 4 41 | 5 0 | 3 36 | 3 55 | 7 2 | 7 20 | 0 17 | 0 38 | 8 18 | 8 31 | 0 21 | 0 40 | 1 10 | 1 29 | 6 21 | 6 40 | 0 9 | 0 29 | 9 15 | 9 33 | 5 4 | 5 22 |
| S | 24 | 3 [illegible] | 4 18 | 8 27 | 8 45 | 5 19 | 5 38 | 4 14 | 4 33 | 7 36 | 7 52 | 0 58 | 1 18 | 8 49 | 9 6 | 0 58 | 1 16 | 1 48 | 2 6 | 6 59 | 7 17 | 0 48 | 1 7 | 9 50 | 10 7 | 5 40 | 5 58 |
| M | 25 | 4 32 | 4 48 | 9 3 | 9 21 | 5 57 | 6 15 | 4 52 | 5 10 | 8 8 | 8 24 | 1 37 | 1 55 | 9 22 | 9 37 | 1 34 | 1 51 | 2 24 | 2 41 | 7 34 | 7 51 | 1 26 | 1 45 | 10 24 | 10 41 | 6 15 | 6 32 |
| Tu | 26 | 5 5 | 5 [illegible] | 9 38 | 9 55 | 6 33 | 6 51 | 5 28 | 5 47 | 8 40 | 8 55 | 2 18 | 2 31 | 9 51 | 10 5 | 2 8 | 2 25 | 2 58 | 3 14 | 8 7 | 8 23 | 2 3 | 2 21 | 11 0 | 11 22 | 6 49 | 7 7 |
| W | 27 | 5 39 | 5 59 | 10 13 | 10 33 | 7 11 | 7 32 | 6 7 | 6 28 | 9 10 | 9 26 | 2 49 | 3 7 | 10 20 | 10 37 | 2 42 | 3 0 | 3 31 | 3 49 | 8 41 | 9 0 | 2 40 | 3 0 | 11 47 | — | 7 27 | 7 48 |
| Th | 28 | 6 18 | 6 40 | 10 57 | — | 7 56 | 8 23 | 6 51 | 7 17 | 9 45 | 10 8 | 3 27 | 3 49 | 10 56 | 11 19 | 3 21 | 3 45 | 4 10 | 4 33 | 9 21 | 9 44 | 3 23 | 3 48 | 0 16 | 0 49 | 8 11 | 8 36 |
| F | 29 | 7 3 | 7 30 | 11 [illegible] | 1 5 | 8 53 | 9 27 | 7 47 | 8 21 | 10 33 | 11 2 | 4 12 | 4 38 | 11 46 | — | 4 12 | 4 44 | 4 58 | 5 27 | 10 12 | 10 46 | 4 17 | 4 50 | 1 24 | 2 3 | 9 6 | 9 42 |
| S | 30 | 7 59 | 8 33 | 0 30 | | 10 6 | 10 45 | 8 58 | 9 38 | 11 35 | — | 5 10 | 5 44 | 0 20 | 0 58 | 5 23 | 6 4 | 6 1 | 6 39 | 11 25 | — | 5 25 | 6 1 | 2 43 | 3 20 | 10 22 | 11 2 |
| M | 31 | 9 14 | 9 59 | 1 41 | 2 10 | 11 22 | 11 58 | 10 16 | 10 51 | 0 15 | 0 56 | 6 20 | 6 56 | 1 37 | 2 16 | 6 46 | 7 25 | 7 17 | 7 55 | 0 3 | 0 41 | 6 37 | 7 12 | 3 54 | 4 26 | 11 42 | — |



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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* − *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −3 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 13 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 8 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 2 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbellton | −0 23 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 3 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 3 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 53 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 53 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 5.9 | Leith |

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 3 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 43 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 13 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 13 | Devonport |
| Peterhead | −1 43 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 33 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 3 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 53 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 22 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 23 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 43 | London |
| Youghall | +0 13 | Queenstown |

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## MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 240 | England—Channel Islands — Jersey — Gorey | Position of upper (red) leading light. |
| 241 | „ Thames Entrance — Girdler Light-vessel | Run into and sunk; another light-ship in position. |
| 242 | „ East Coast—Fern Island Light | Alteration in character. |
| 243 | „ Bristol Channel—Caldy Island Light | To be altered in character in Oct. |
| 244 | „ West Coast—Maryport | Various lights and signals. |
| 245 | Ireland—East Coast—Wexford Harbour | Alterations in buoyage. |
| 246 | „ „ Lough Carlingford | Alterations in buoyage. |
| 247 | Baltic—Prussia—Kiel Fiord | Submarine mines. |
| 248 | Spain—West Coast—Vigo Bay | Particulars of buoyage. |
| 249 | Mediterranean—Sardinia—Bosa River Entrance—Rossa Islet | Light altered in colour. |
| 250 | „ Adriatic—Gulf of Venice —Port Pola | Torpedo ground. |
| 251 | „ Gulf of Fiume—Fiume | Additional harbour light. |
| 252 | „ Ionian Sea — Corfu South Channel—Lefchimo Point | Light-vessel replaced. |
| 253 | Africa — West Coast — Gambia River Entrance | Positions of buoys. |
| 254 | India — West Coast — Canara Coast — Gumta | Provisional light. |
| 255 | „ „ Rajpuri Point | New light. |
| 256 | „ „ Katiawar Coast—Jafarabad | Provisional light. |
| 257 | Bay of Bengal—Madras Coast | Supposed shoal. |
| 258 | South America — Brazil — Cotinguiba River | Provisional light. |
| 259 | „ „ Abrolhos Channel | Shoals discovered. |
| 260 | West Indies—Guadeloupe—Ste. Marie Harbour | New light buoy. |
| 261 | United States — Delaware — Christiana Creek | Beacon light at entrance. |
| 262 | „ New Jersey and Delaware | Change of Light-vessels. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

240.—England. — *Channel Islands.* — *Jersey.* — *East Coast.*— *Gorey.*—*Position of Upper (Red) Leading Light.*—With reference to Notice in 1883, on the exhibition of a fixed red light from hill near Gorey church, east coast of Jersey, to serve as marked mark for that harbour; the light (placed in the sea face

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of the road) bears N. 42½° W. from Gorey pier head light, distant 535 yards.

*Note.*—Vessels keeping Gorey pier head light (fixed white) in line with this red light, will pass northward of Les Frouquies de Grève, southward of Ecureuil rock, and near the northern end of Azicot (or Flat) rock. In passing Ecureuil rock, the red light should not be opened northward of the white light. *Variation*, 18° *W.*

241.—ENGLAND.—*Thames Entrance.—Girdler Light-Vessel.*—The Girdler light-ship having been run into and sunk, another light-vessel has been placed in her charted position.

242.—ENGLAND.—*East Coast.—Fern Island Light.—Alteration in Character.*—In accordance with previous Notice, it is intended to alter, on or about the 1st day of August, 1884, the character of the high light of the Inner Fern from 30 seconds white flashing to 20 seconds *white* and *red flashing*, showing *two white* flashes, followed by a *red* flash. The period of each flash and eclipse will be 20 seconds.

243.—ENGLAND.—*West Coast.—Bristol Channel.—Caldy Island Light.—Intended Alteration in Character.*—In the month of October, 1884, the following alteration will be made in the character of the light exhibited on Caldy island, approach to Caldy and Tenby roads; it will be an *occulting* light, giving *one occultation every half-minute* in the following order:—Light, *twenty-seven seconds;* eclipse, *three seconds.*

244.—ENGLAND.—*West Coast.—Maryport.—Lights and Signals.*—On 24th June, 1884, the following lights and signals will be shown:—

(1) A *fixed white* light on the outer end of the south pier.

(2) A *fixed red* light on the outer end of the north pier.

(3) A *fixed white* light on the inner end of the south pier, while there is 8 feet water in the harbour. When there is any obstruction in the channel or harbour entrance, an additional *tidal* light *red*) will be shown 12 feet below the white light.

A *fixed green* light on the jetty on the south side.

Of the *fixed red* light on the Tongue pier on the north side.

steel, and red ball on the inner end of the south pier, while there is Glasgow d

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8 feet water in the harbour during the day, and in case of obstruction in the channel, an additional red ball below.

*Note.*—Vessels entering the harbour, will have numbers One, Three, Four, and Six on the starboard-hand; and numbers Two and Five on the port-hand.

245. —IRELAND. — *East Coast.—Wexford Harbour.—Intended Alterations in Buoyage.*—On and after 1st July, 1884, the starboard-side of the channel, when entering Wexford harbour from seaward, will be marked by uniformly-coloured *black* buoys; and the port-side of the channel will be marked by *red* buoys.

*Note.*—The buoys marking the entrance to Wexford harbour are altered in position, as the bar and channel change.

246. —IRELAND.—*East Coast.—Lough Carlingford.—Intended Alterations in Buoyage.*—During the summer of 1884, the following alterations will be made in the buoyage of lough Carlingford:—The starboard-side of the channel approaching from seaward will be marked by *black conical* buoys; the port-side of the channel will be marked by *red can* buoys. These alterations will be completed on or before 1st October, 1844.

247. — BALTIC.—*Prussia.—Kiel Fiord.—Submarine Mines.*—From the middle of June, 1844, and until further Notice, a space off Voss Brok (Vossbroock), on the western side of Kiel fiord, is closed to shipping, on account of practice with submarine mines. The space is marked by six white nun buoys. The practice will terminate on 26th August, 1884.

248.—SPAIN.—*West Coast.—Vigo Bay.—Particulars of Buoyage.*—The following information has been received from the Spanish Government, relative to the buoyage of Vigo bay:—

*North Shore.*—Punta Subrido buoy is a cask buoy (provisional), painted black. Castros da Barra buoy is a conical buoy, painted black, and surmounted by a black and white globe. Bajo Borneira is marked by a bell buoy, painted black and red, with white globe. Bajo Zalgueiron is marked by a can buoy, painted black, with white globe. Punta Rodeira buoy is a can buoy, painted black and white in horizontal stripes, with white globe. Piedra de Pego is marked by a red triangular frame beacon, surmounted with a black and white cross.

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*South Shore.*—Rondana shoal is marked by a conical buoy with globe, painted red. Cabo de Mar buoy is a conical buoy, painted red and white in vertical stripes, with white globe. Bouzas (El Cabezon) buoy is an inverted conical buoy, painted red.

*Puerto de Bayona.*—Monteferro buoy is a cask buoy (provisional), painted red. Puerta Real buoy is an inverted conical buoy, painted red. Piedra Baiña (Sta. Marta) is marked by a red triangular frame beacon with white cross.

The buoy, formerly marking Los Castros de Agoeiro, at the southern entrance of Vigo bay; also that marking Lobeira rock, in San Simon Bay, have been removed.

*Note.*—These buoys are often damaged in bad weather, and are then temporarily replaced by others.

249.—MEDITERRANEAN.—*Sardinia.—West Coast.—Bosa River Entrance.—Rossa Islet Light, Alteration in Colour.*—With reference to Notice in 1883, on the exhibition of a provisional light from the tower on Rossa islet, Bosa (Temo) river entrance, on 13 May, 1884, a *fixed white* light would be exhibited in place of the provisional red light previously shown.

250.—MEDITERRANEAN. — *Adriatic. — Gulf of Venice. — Port Pola.—Torpedo Ground.*—On 1st June, 1884, a series of experiments with submarine mines would be commenced at Pola, for which purpose a number of mines would be laid from Monte Grosso towards the entrance of that port. The line of these mines is marked by a boat, from which a red flag is shown during the day and a *white* light at night. Passage between this boat and Monte Grosso is prohibited.

251.—MEDITERRANEAN.—*Adriatic.—Gulf of Fiume.—Additional Harbour Light at Fiume.*—On 1st June, 1884, a harbour light would be exhibited from an iron support at the extremity of the projecting mole at the entrance to the petroleum port, Fiume. It is a *fixed green* light, visible through an arc of 270°, elevated 26 feet above the sea, and should be seen from a distance of about 8 miles.

*Note.*—Vessels are prohibited from entering this port during the night.

252.—MEDITERRANEAN.—*Ionian Sea.—Corfu South Channel.—Lefchimo Point Light-vessel Replaced in Position.*—With reference

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to Notice 215, p. 614, on the withdrawal of Lefchimo (Alefkimo) point light-vessel, western side of Corfu South channel, coast of Corfu :—Further notice has been given that the light-vessel would be replaced in position, and the light re-exhibited on 1st June, 1884.

253.—AFRICA.—*West Coast.—Gambia river entrance.—Positions of Buoys.*—The following information has been received concerning the positions of the buoys at Gambia river entrance :—

*Northern or Red Bank buoy* is correctly placed on chart.

*Fairway buoy* lies with cape St. Mary bearing S.E. ¾ S., distant 9$\frac{3}{10}$ths miles ; or 7 cables E.S.E. of the position assigned.

*Middle buoy* lies with cape St. Mary bearing S. 6° W., distant 4½ miles ; or 1$\frac{3}{10}$th miles E. by S. ½ S. of the position assigned.

*African Knoll buoy* is moored near the N.E. edge of African knoll, with cape St. Mary bearing S.W. by W. ½ W., distant 6$\frac{3}{10}$th miles. *Variation*, 20° *W.*

254.—INDIA.—*West Coast.—Cánara Coast.—Provisional light at Cumta.*—On 1st June, 1884, and until further notice, in consequence of the dangerous condition of the lighthouse at Cumta (Kumta or Coompta), a provisional light would be exhibited from the storm-signal mast adjoining the lighthouse, in lieu of the light previously shown :—It is a *fixed white* light, probably visible from a distance of about 5 miles.

255.—INDIA.—*West Coast.—Light on Rajpuri Point.*—On 1st July, 1884, a light would be exhibited on Rajpuri point, south side of Rajpuri river entrance. It is a *fixed white* light, visible from a distance of 18 miles. Position approximate, lat. 18° 17′ N., long. 72° 55′ E.

256.—INDIA.—*West Coast.—Katiawar Coast.—Provisional Light at Jáfarábad.*—A provisional light is now exhibited, in place of the old light, from a lighthouse recently erected on the west point of Jáfarábad (Jafrabad) harbour entrance. It is a *fixed white* light, elevated 80 feet above high water, and visible from a distance of about 7 miles. The lighthouse, 55 feet high, is constructed of masonry and white in colour. Position, lat. 20° 51′ 10″ N., long. 71° 22′ 25″ E.

*Note.*—This light will be shown until the illuminating apparatus of the permanent light is obtained.

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257.—Bay of Bengal.—*Madras Coast.—Shoal.*—The s.s. *Clan Macintosh* is reported to have touched the ground in lat. 13° 18′ N., and long. 80° 25′ 30″ E., 5¼ miles off shore, nearly abreast of the Ennore shoal, with the Pulicat lighthouse, bearing N.W. ¼ N., and the Madras lighthouse, S.W. ¾ S. On sounding immediately 4 fathoms were found on the starboard-side and 6 fathoms on the port-side, and shortly after no bottom with the hand lead; ship going about 10 knots. At 11 a.m. Pulicat lighthouse bore west 5 miles distant, ship steering S. by E. true; and at 11.45 a.m. the vessel was found to have stopped her way on what the commander considers a mud bank. Mariners are warned not to approach this part of the coast by day or night until such time as the spot has been examined, and the position of the shoal, if any, ascertained.

258.—South America.—*East Coast.—Brazil.—Provisional Light at Gotinguiba River Entrance.*—With reference to Notice 230, p. 618, on the destruction by fire of the lighthouse (Aracaju) on the south side of Cotinguiba (or Contandiba) river entrance, a provisonal light is exhibited from the site of the lighthouse; it is a *fixed white* light, visible from a distance of 9 miles. Further Notice concerning the permanent light will be given.

259.—South America.—*Brazil.—Shoals in Abrolhos Channel.*—The French steam-vessel *La France* reports the existence of two shoals lying near the fairway of Abrolhos channel. The northern of these shoals, on which *La France* touched, is reported to lie is lat. 17° 45′ 30″ S., long. 38° 41′ 50″ W., and is possibly an extension of Orénoque shoal reported in 1883. The southern shoal (*La France shoal*), on which *La France* also touched, is stated to be situated in lat. 17° 51′ 30″ S., long. 38° 42′ 21″ W.

260.—West Indies.—*Guadeloupe.—East Coast.—Ste. Marie Harbour.—Light Buoy in North Entrance.*—Early in May, 1884, a light-buoy would be moored in the channel between Gros Loup and Les Peignes reefs, in the north entrance to Ste. Marie harbour:—It shows a *fixed red* light, visible from a distance of 3 miles.

*Note.*—Vessels approaching the harbour by this channel, should leave the buoy on the port-hand.

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261.—UNITED STATES.—*Delaware.—Christiana Creek.—Beacon-Light at Entrance.*—On and after June 20, 1884, a *fixed red* light, supplied by compressed gas, would be exhibited from the structure recently erected on the pier at the end of the jetty at the mouth of the Christiana Creek. Elevation, 47 feet above mean low water; and visible 7½ miles, all round the horizon. The structure is a red pyramidal skeleton wooden tower, striped with black on the chamfers of the posts, surmounted by a lantern, with a gallery around the lantern.

262.—UNITED STATES.—*New Jersey and Delaware.—Change of Light-Vessels.*—On or about July 16, 1884, light-ship No. 40 will be replaced upon her station on Five-Fathom bank, and on or about the same date light-ship No. 19, moored on Fourteen-Foot bank, Delaware bay, will be removed for repairs, and relief light-ship No. 24 will be placed on the latter station. Light-ship No. 24 is schooner-rigged, painted red, with the word "*relief*" in large white letters on each side, and "No. 24" on the stern, and has a hoop-iron cage day-mark at each mast-head. Light-ship No. 19 will be replaced as soon as the repairs are completed.

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CHARTS, PLANS, &c., PUBLISHED BY THE HYDROGRAPHIC DEPARTMENT, ADMIRALTY, IN MAY AND JUNE, 1884.

| *No.* | | *s.* | *d.* |
|---|---|---|---|
| 52 | Ireland, east coast:—Wicklow roadstead and harbour ... ... ... ... ... ... | 0 | 6 |
| 1091 | South America, east coast:—Monte Video bay ... | 1 | 6 |
| 1331 | South America, east coast:—Port Belgrano ... | 2 | 0 |
| 626 | Japan:—Naka Koshiki and Tatsu Maru. Aburatsu harbour ... ... ... ... ... ... | 1 | 0 |
| 1185 | England, River Thames:—Sea reach ... ... | 2 | 6 |
| 863 | North America, east coast:—Hudson bay and strait ... ... ... ... ... ... | 3 | 0 |
| 292 | Plan added. Femme harbour. | | |

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CHARTS THAT HAVE RECEIVED IMPORTANT CORRECTIONS.

| *No.* | |
|---|---|
| 2252 | Baltic sea :—Gulf of Bothnia. |
| 2299 | Baltic sea :—Horsland to Stierno point. |
| 2241 | Baltic sea :—Entrance to gulf of Finland. |
| 780 | Pacific ocean :—S.W. sheet. |
| 2230 | Black sea :—Bosporus to cape Kaliakara. |
| 159 | South America, west coast :—Puerto del Morro. Cockle cave and approaches. |
| 196 | Baltic sea :—Nidingen to Hönö. |
| 2346 | Baltic sea :—Winga sound. |
| 2229 | Baltic sea :—Entrance to Great and Little Belts. |
| 2246 | Baltic sea :—Baltic port to Hogland. |
| 2224 | Baltic sea :—Helsingfors, Sveaborg, and parts adjacent. |
| 2296 | Baltic sea :—South Quarken to Hornsland. |
| 2360 | Baltic sea :—Hango head to South Quarken. |
| 2360 | Baltic sea :—Cape Falsterbö to Kalmar sound, |
| 2329 | Norway, east coast :—Sando to Svenöer. |
| 23 | South America, west coast :—Channels between Magellan strait and gulf of Trinidad. |
| 24 | South America, west coast :—Channels between the gulf of Trinidad and gulf of Penas. |
| 650 | Africa, east coast :—Kilimani or Quilimane river. |
| 2114 | Baltic sea:—The Kattegat. |
| 2325 | Baltic sea :—Lim fiord. |
| 850 | North sea :—Nordzee or Ymuiden harbour. |
| 545 | Magellen strait :—Royal road and Elizabeth island. |
| 1749 | Brazil :—Monte Video to Buenos Ayres. |
| 2865 | Africa, east coast :—Mouths of the Zambesi. |
| 124 | North sea :—Texel. |
| 2322 | North Sea :—Scheveningen to Ameland. |
| 893 | Newfoundland :—Burni harbour to Devil bay. |
| 1380 | South Pacific ocean :—New Caledonia, New Hebrides and Loyalty islands. |
| 631 | South America, west coast :—Smyth channel. |
| 1019 | China :—Yu-lin-Kan bay, etc. |
| 2362 | Baltic sea :—Landsört to Bothnia gulf. |

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HYDROGRAPHIC NOTICES ISSUED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY.

*No.*

13 PACIFIC OCEAN. Relating to Wells reef and Queen of Nations shoal, reported dangers in the South Pacific.

14 AFRICA PILOT, part 1. Relating to the Azores, Canary, Cape Verde islands, and Volta river.

15 SOUTH AMERICA PILOT, part 1. Relating to the entrance of Rio de la Plata.

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BOOKS.

| | *s.* | *d.* |
|---|---|---|
| CHINA SEA DIRECTORY, Vol. 4. Comprising the coasts of Korea, Russian Tartary, the Japan islands, gulfs of Tartary and Amur, and the sea of Okhotsk; also the Meiaco, Liu Kiu, Linschoten, Mariana, Bonin, Saghalin, and Kuril islands, 2nd edition, 1884 ... | 7 | 6 |
| A BAROMETER MANUAL for the use of seamen ... ... | 1 | 3 |
| WEST COAST OF HINDOSTAN PILOT, *Supplement*, *No.* 1. Relating to the west coast of Hindostan and the south coast of Ceylon. | | |
| CHINA SEA DIRECTORY, Vol. 1, *Supplement*, *No.* 1. Revised sailing directions for Gaspar strait and approaches... | 1 | 6 |

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SPAIN.—CAPE FINISTERRE.—*Current.*—Numerous observations by French National vessels, in the neighbourhood of Cape Finisterre, have established the fact that there exists no cause affecting the deviation of the magnetic needle in that vicinity, and that it is principally to the current setting toward the land, under the influence of the prevailing winds, that the greater part of the disasters occurring in that locality must be attributed.

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## OUR OFFICIAL LOG.

OFFICIAL RETURN OF BRITISH WRECKS IN JUNE, 1884.—The number and tonnage of British vessels respecting whose loss reports were received at the Board of Trade during the month of June, 1884, and the number of lives lost are as follow:—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing ..... | 57 | 15,771 | 111 |
| Steam ..... | 10 | 6,662 | 6 |
| Total ..... | 67 | 22,433 | 117 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in June, relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—THOMAS GRAY, Assistant-Secretary, Marine Department.—Board of Trade, 3rd July, 1884.

### OFFICIAL INQUIRIES AT HOME, 1884.

2201. *Viatka*, S.S.; built at Hull, 1867; owned by Mr. C. M. Norwood; tonnage, 564; Newcastle to Libau; coals; stranded near Toreko, coast of Sweden, January 3, 1884. Inquiry held at Westminster, June 13, 1884, before Rothery, Wreck Commissioner; Curling and Ronaldson, N.A. Master in default in negligently navigating his vessel at full speed, whilst the atmosphere was thick with snow, and for neglecting to verify his position by taking a cast of the lead or otherwise. Under the circumstances of his having lost his employment, &c., his certificate was not dealt with.

2202. *Daring*, schooner, and *Skellig*, S.S; former built at Fraserburgh, 1870; owned by Mr. C. Ross and others; tonnage, 98; River Mersey to Lerwick; salt; latter built at Belfast, 1881; owned by Mr. G. G. Kidston and others; tonnage, 201; Larne to Liverpool; general cargo and one passenger; in collision off the Chickens, Calf of Man, May 25, 1884, when both vessels foun-

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dered, and loss of life ensued. Inquiry held at Glasgow, June 16, 1884, before Reid and Arkman, Justices; Knox, Beasly, and Pattison, N.A. Master of *Skellgs* to blame, in being below when the safety of the vessel required his care, and for negligent navigation, in neglecting the Regulations for Prevention of Collisions at Sea. Certificate suspended for six months.

2209. *Chancellor* and *Monarch*, both fishing vessels; former built at Burton Stather, 1880; owned by Messrs. J. Wray and Sons; tonnage, 82; latter built at Blackwall, 1835; owned by Mr. F. Harnden, tonnage, 44. In collision about E.N.E. of Spurn light, April 5, 1884, when loss of life ensued. Inquiry held at Hull, June 23, 1884, before Twiss, Judge; Grant, Wilson, and Anderson, N.A. Accident caused through an inefficient look-out being kept on board the *Chancellor*.

2212. *State of Florida*, s.s., and *Ponema*, barque; former built at Glasgow, 1875; owned by State Steamship Company (Limited); tonnage, 2,034; New York to Glasgow; general cargo and passengers; latter built at Richibucto, N.B.; owned by Messrs. Jardine; tonnage, 749; Liverpool to Miramichi; ballast. In collision at sea, April 18, 1884, when both vessels foundered, and 130 lives were lost. Inquiry held at Glasgow, June 25, 1884, before Rothery, Wreck Commissioner; Knox, Beasley, and Murdoch, N.A. Collision due to default of chief officer of *State of Florida* in not keeping a good and proper look-out. His certificate as master suspended for six months.

2213. *Lady Bird*, barque; built at Liverpool, 1866; owned by Messrs. Hope and Co; tonnage, 497; the Tyne to Iquique; coals; supposed to have foundered at sea. Inquiry held at Newcastle, June 28, 1884, before Rothery, Wreck Commissioner; Harland and Kiddle, N.A. In good and seaworthy condition when leaving port and not overladen, no evidence as to cause of loss.

2214. *Eleanor and Jane*, schooner; built at Sunderland, 1878; owned by Mr. D. Davies, the master; tonnage, 119; Port Madoc to Hamburgh States; lost near mouth of Erme river, Devonshire, May 27, 1884. Inquiry held at Liverpool, July 2, 1884, before Raffles, Judge; Castle and Davies, N.A. Loss due to master standing in towards the land for too long a time.



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2215. *Quiz*, sloop; built at Wakefield, 1856; owned by Messrs. Suggett and Dudding; tonnage, 45; Newcastle to Lynn; coals; supposed to have foundered at sea. Inquiry held at Newcastle, June 28, 1884, before Rothery, Wreck Commissioner; Harland and Kiddle, N.A. In good and seaworthy condition when leaving port; she was, however, overladen and insufficiently manned. Probably foundered in gale of wind which occurred soon after she sailed.

2221. *Medusa*, barque; built at Maitland, U.S., 1870; owned by Mr. William Thomas and others; tonnage, 760; Leith to Monte Video; coal; lost at sea. Inquiry held at Edinburgh, July 1, 1884, before Rothery, Wreck Commissioner; Ward and Pickard, N.A. Vessel seaworthy when leaving Leith. No evidence as to cause of loss.

2225. *Craiglands*, s.s., iron; built at West Hartlepool, 1883; owned by Robert Hardy, Jun., and others; tonnage, 835; Taganrog to Hamburg, *viâ* Portland; rye; stranded near Prawle Point, June 11, 1884. Inquiry held at Middlesbro', July 4, 1884, before Coleman, Judge; Parish and Vaux, N.A. Casualty due to negligent navigation of master. Certificate suspended for four months.

2226. *Orion*, brigantine; built in New Brunswick, 1865; owned by Mr. R. L. Brown and Mr. R. M'Clennan, Dundalk; tonnage, 112; Garston to Dundalk; coal; not heard of since sailing. Inquiry held at Liverpool, July 5, 1884, before Raffles, Judge; Grant and Davies, N.A. Vessel left Garston in good condition, and probably foundered in heavy gale after she left.

2228. *Rajmahal*, ship; built at Whitehaven, 1858; owned by Mr. Humphrey Williams; tonnage, 1,301; Liverpool to Calcutta; coal; not heard of since spoken. Inquiry held at Liverpool, July 11, 1884, before Raffles, Judge; Grant and French, N.A. Vessel left Liverpool in good condition. No evidence as to loss

2230. *Refulgent*, s.s.; built at Sunderland, 1881; owned by Mr. James Westoll and others, of Sunderland; Tyne to Cronstadt; coal; stranded on or near Osel Island, May 6, 1884. Inquiry held at Sunderland, July 10, 1884; before Booth and Horan, Judges; Parfitt and Kennedy, N.A. Casualty due to negligent navigation on the part of the master. Certificate suspended for three months.

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2231. *Venetia*, s.s., and *Foscolino*, s.s.; the former built at Low Walker, 1864; owned by London Steamship Company; tonnage, 509; London to Genoa; general merchandise; the latter built at Sunderland, 1882; owned by Wear Steamship Company; tonnage, 716; Bilbao for Amsterdam; iron ore. In collision off Ushant, June 14, 1884. Inquiry at London, before Rothery, Wreck Commissioner; Powell, Ronaldson, and Hyde, Assessors. Blame to masters of both vessels for not reversing engines in addition to stopping. Certificates not dealt with.

2235. *Loch Fyne*, ship; built at Dalmuir, 1876; owned by Mr. James Aitken and other; tonnage, 1,213; Port Lyttleton, New Zealand to United Kingdom; wheat. Not heard of since sailing on May 14. Inquiry at Glasgow, before Grierson and Clapperton, Judges; Powell and Pattison, N.A. Vessel in all respects in good and seaworthy condition on leaving Lyttleton. No evidence as to cause of loss.

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OFFICIAL INQUIRIES ABROAD, 1884.

2203. *Zambesi*, s.s., and *Salvator Accame*, barque; in collision in Straits of Malacca, March 28, 1884. Inquiry held at Penang, March 29, 1884. Second mate of steamer in default. Censured.

2204. *Ada*, ketch; stranded at entrance of Newcastle Harbour, April 29, 1884. Inquiry held at Newcastle, N.S.W., May 1, 1884. Casualty due to vessel missing stays whilst beating into harbour.

2205. *Mimosa*, ketch; lost in Stokes Bay, Kangaroo Island, April 14, 1884. Inquiry held at Port Adelaide, April 25, 1884. Loss occasioned through heavy gale of wind.

2206. *India*, s.s.; abandoned at sea, April 29, 1884. Inquiry held at Newcastle, N.S.W., May 7, 1884. Abandonment justifiable.

2207. *Princess of Wales*, barque; abandoned at sea, April 22, 1884. Naval Court held at Valparaiso, May 10, 1884, Abandonment justifiable. Vessel overladen when leaving port.

2208. *Canton*, s.s,, and *Stolzenfels*, s.s.; in collision in Saigon River, May 10, 1884. Inquiry held at Saigon, May 12, 1884. Pilot in charge of *Canton* to blame.



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2210. *Bulli*, s.s.; lost off Paternoster, May 6, 1884. Inquiry held at Cape Town, May 20, 1884. Master in default for careless navigation. Certificate suspended for twelve months.

2211. *Glencarn*, s.s., and *Rajah Brooke*, s.s.; in collision in Penang Harbour, April 25, 1884. Inquiry held at Penang, April 26, 1884. Master of *Rajah Brooke* in default for neglecting Rule of the Road, as laid down in Merchant Shipping Act. Certificate suspended for six months.

2216. *Prospector* and s.s. *Ajax*; the former run into and sunk while loading coals at Newcastle, N.S.W., May 2, 1884. Inquiry at Newcastle, May 15. Master of *Ajax* to blame. Reprimanded only, on account of good character.

2217. *Pioneer*, s.s.; stranded and lost on voyage from Singapore to Siak, May 4, 1884. Inquiry at Singapore, May 14. Master committed grave error of judgment. S everely censured and cautioned.

2218. *Comilla*, s.s.; stranded off mouth of Sungoo River, March 14, 1884. Inquiry at Chittagong, April 22. Casualty due to obscuration of Kutubdia light by fog. No blame to master.

2219. *Asiatic*, s.s.; stranded and got off without damage in Fish Bay, April 27, 1884. Inquiry at Cape Town, May 15. Stranding due to wrongful act or default of master. Court unable to interfere with his certificate.

2220. *Batman*, s.s.; grounded on coast of Algeria, near Aschaq Island, January 6, 1884. Inquiry at Melbourne, April 22. Master and engineer drunk. Certificate of former suspended for two years, of latter for one month.

2222. *Yarra*, barque: wrecked on Scott's Reef, Arafura Sea, January 16, 1884. Inquiry at Melbourne, March 28. Vessel drifted on to reef during very heavy gale and unusual current.

2223. *Glaucus*, s.s; grounded in the Port River, Adelaide, April 4, 1884. Inquiry at Port Adelaide, April 29. No blame to pilot. Casualty due to bad steering qualities of vessel.

2224. *Welcome*, schooner; stranded near Circular Head, Tasmania, April 17, 1884. Inquiry at Port Adelaide, May 10. Master misjudged his distance. Cautioned.

2227. *Alert*, s.s. and *Williams*, s.s.; collision in River Yarra,

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March 19, 1884. Inquiry at Melbourne, March 28. Master of *Alert* not justified in passing with vessel in tow. Cautioned.

2229. *Nerbudda*, s.s., and *Asia Mineure*, barque ; collision March 29, 1884. Inquiry at Bombay, April 26. Collision due to negligence of second officer of *Nerbudda*. Certificate suspended for six months.

2232. *Sir William Armstrong*, s.s. ; stranded on Perim Island, April 18, 1884. Inquiry at Bombay, May 22. Casualty due to over-confidence and indiscretion of master and chief officer. Severely censured.

2233. *Ascalon*, s.s. ; stranded on Stork Reef, Romania Point, May 24, 1884. Inquiry at Singapore, June 5. Casualty due to careless navigation on part of master and second officer. Certificate of former suspended for three months ; of latter, for six months.

2234. *Charles Cotesworth*, barque ; stranded near bar of Columbia River, December 30, 1883. Inquiry at Astoria, Oregon, June 10, 1884. Casualty due to over-confidence and bad judgment of pilot. Master, and first and second mates cautioned.

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## MARINE INVENTIONS.

*The following list has been compiled for this Journal by Messrs. W. P. Thompson and Boult, British and International Patent and Trade Mark Agents and Consulting Engineers, of* 323, *High Holborn, London, W.C., and* 6, *Lord Street, Liverpool :—*

### PATENTS PUBLISHED.

4283. 6th September, 1883. J. R. Thomson, of Clydebank Shipyard and Engine Works, Dumbarton. "Improvements in the construction of the saloons of steamships." This invention has for its object chiefly such a construction of saloon as will afford better light and facility of ventilation combined with great elegance. According to this invention an opening of unusually large dimensions is made in the promenade deck or other deck over the main-deck, and

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the cross beams of the deck are cut away close to the sides of this opening, where a strong girder or coaming is secured and tied to the cross beams round the opening to strengthen the vessel, or to counteract the weakening effect due to the cutting of the beams. This girder rests upon ornamental pillars reaching to the floor of the saloon or main-deck, and are supported by pillars extending to the keelsons of the vessel. From the girder, or from a position a little above it, an arch of iron or wooden ribs is sprung, and reaches up to about the level of the upper-deck. This arch is suitably glazed and has openings for ventilation. The arch is preferably protected by a housing with windows in it, and over it is a skylight, or a strong iron trunk or other means for admitting light and air. The ribs of the arched roof may serve further to strengthen the vessel, and bulkheads may further serve to this end. A double arch may be constructed and be supported on central columns.

4361. 12th September, 1883. J. B. Hannay, of Glasgow, Chemist. "Improvements in means or apparatus for preventing the corrosion and fouling of the bottoms of iron and steel ships and metal-sheathed wooden ships, and also applicable to propellers and other parts." In carrying out this invention, the bottom of a ship is kept clean or uncoated with any paint or composition, and it is rendered electro-negative by fixing upon it blocks or plates of zinc, so placed as to be immersed in the water in which the ship floats. Electricity is thus generated, and the iron is preserved at the expense of the zinc. The blocks must be soldered on to ensure thorough contact.

4429. 15th September, 1883. George Taylor, of Penarth, Glamorgan. "Improvements in apparatus for use in loading vessels with coal." In shipping coal by means of a staith, an inclined shoot is usually employed for conveying the coal from the railway wagons to the vessel, and to obtain a sufficient inclination of the shoot, the wagons if entering the staith at a low level, have to be raised. The coal first shipped at each hatchway is frequently made into a conical heap so as to allow the remainder of the coal to roll along the sides of the heap. Big pieces are thereby broken and small ones gathered into one place. This invention relates first to apparatus for conveying coal from the staith to the hatchway in a horizontal or

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slightly inclined direction. The apparatus consists preferably of a conveyor composed of a series of carrying plates or platforms working in guides between the hatchway and staith. The motion is produced by power or by gravity. Another part of the invention relates to apparatus for lowering the coal. It comprises a series of platforms at suitable distances one vertically above the other. They may be worked by endless chains or similar means.

4480. 19th Sept., 1883. William John Clapp, of Nantyglo, in the County of Monmouth, Surgeon. "Improvements in the construction of ships, whereby war ships are protected against damage by shot or otherwise, and merchant vessels are readily ballasted, which improvements are also applicable to armour-plated turrets, or forts for ships, or for land defences." The invention is carried into effect as follows:—The outside of the ship down to a suitable depth below the water line is made of iron or steel plates, rolled or otherwise, shaped with curved projections thereon (either vertical or horizontal), forming a series of cells or chambers between the inner face of these plates, and plain plates forming the skin proper of the vessel. The cells communicate with one another, and one or more apertures are provided through which water can be admitted. In a war vessel, the water admitted into these cells will distribute the impact so as to render the vessel safer, and by filling the described cells or chambers, a merchant vessel will be ballasted in a readier manner than could heretofore be done.

4809. 9th October, 1883. David P. Dey, of Brooklyn, and George B. Hathaway, of New York, both in the United States of America. "Improvements in hydraulic steering apparatus for vessels." The object of this invention is to provide means for steering vessels in case of accident to the rudder by the impact of a fluid (steam or water) upon the water in which the vessel floats. A further object of this invention is to place the steering devices beyond the reach of projectiles and obstructions. In carrying out this invention either two superposed pipes are employed leading from a force pump or a source of steam supply to the stern of the vessel, and terminating in a curved discharge. Mechanism is employed, which allows the ejector or discharge end to be turned to either side of the vessel at right angles (or nearly so) to the longitudinal axis

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of the latter. This mechanism consists of rack bars operated from the pilot house or other convenient position; the rack bars gear with pinions on the pipes, which are swivelled on the force pump or upon the steam supply. It is readily intelligible that by causing a jet to issue forcibly at one or the other side of the vessel, it will be driven to move in a direction contrary to that of the jet. Instead of providing for the issue of the jet at the stern only of the vessel, two jets may be applied, one at the stern and one at the bow. In that case a pipe with four branches may be used, and a suitable cock allows the necessary manipulation of the jets.

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## CHOLERA ON BOARD SHIP.

THE recent arrival of the *St. Dunstan* in the Mersey with undoubted cases of cholera on board, has caused public attention to be directed to the fact that, unless great precautions are taken, there is imminent risk of this fatal disease finding its way to the United Kingdom. It appears that the English steamer *St. Dunstan* called at Marseilles to land cargo on her way to Liverpool from Bombay, and on resuming her voyage cholera appeared among the crew. Two deaths only occurred, but the whole of the crew suffered more or less from choleraic diarrhœa. Fortunately, the captain of the *St. Dunstan* showed a proper sense of his responsibilities in sending word from Penarth Roads of the sickness on board his ship, so that when she arrived in the Mersey the sanitary authorities were fully prepared to deal with the case. The ship was at once boarded by Dr. Stopford Taylor and his assistant, Dr. Hope, the sick men were landed and put in the hospital for infectious diseases at Rock Ferry, the clothes were all burned, and the vessel thoroughly disinfected, so that all danger was, happily, averted. Whether the disease was induced by the water taken in at Marseilles, or by the effluvia from the harbour mud, it is impossible to say, but that all the sickness was due to one of these causes, and did not spread from one man to another on board the ship may

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be taken for granted. Another ship the *Carthagena* arrived at Cardiff on the 11th from Marseilles, and no cases of choleraic diarrhœa had occurred during the passage. The ship was boarded by the Officer of Health, thoroughly disinfected by means of chloric and sulphurous acid, and kept in quarantine for a few days. There is no doubt that the cholera shows a tendency to spread, and that ships visiting the two great ports on the Mediterranean are extremely likely to carry the infection away with them. It is therefore most important that captains of all ships touching at infected ports should be on their guard and take every precaution to prevent the germ of the disease from reaching them in the first place, and from developing and spreading among the crew, should it unfortunately do so. We propose in the present paper to say a few words on the nature of cholera and the proper means which should be adopted to check it on board ship.

Unfortunately medical opinion is not altogether united as to the true nature and cause of cholera, one school of thought upholding the contagious and the other the non-contagious nature of the disorder, and no doubt a great deal of evidence may be brought forward in support of both of these views. It may well be said, "who shall decide when doctors disagree," but, however, until the question is definitely settled, the only safe plan to be adopted is to act on the theory that it is contagious, and to take all needful precautions to prevent its spread by human intercourse. The chief advocate for the non-contagious theory is Sir W. G. Hunter, who went to Egypt last year to investigate the cholera, at the request of the English Government. He believes that cholera is endemic in Egypt, and that the outbreak in 1883 was not imported from India. He went out, however, with the preconceived idea that cholera is not contagious, and entirely disbelieves in the existence of anything that can be called a specific cholera germ, and there is no doubt this idea had a strong influence on his report. Although his opinion is agreed with by Sir J. Fayrer, and by many surgeons serving in India, yet the great bulk of English and German authorities are decidedly averse to this theory, and the mass of evidence in support of the communicability of cholera by human intercourse is overwhelming. Dr. Macnamara mentions

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a case in which a small quantity of a fresh rice-water stool, passed by a patient suffering from cholera, was accidentally mixed with four gallons of dirty water, and the mixture exposed to the rays of the tropical sun for twelve hours. Early the following morning nineteen people each swallowed about an ounce of the contaminated water; they only partook of it once, but within thirty-six hours five of these nineteen persons were seized with cholera. In this case the cholera evacuation did not touch the soil; as it was passed so it was swallowed, but (and this is most important to remember) it had been largely diluted with water and the mixture had been exposed to the light and heat of a tropical sun for twelve hours. Again, he says, in the year 1872, "I was engaged in making some experiments on monkeys. For this purpose I exposed to the sun some fresh cholera-dejecta in a pailfull of dirty water. The following morning at about 6.30 a.m., I and my assistant were shut up in a close room with these monkeys, experimenting upon them with this diluted cholera stuff. By two o'clock the same day I was suffering from a severe attack of cholera, and the same evening my assistant was seized with the disease. We were both of us very dangerously ill, passing into a state of collapse in a few hours after the commencement of the symptoms. The monkeys escaped without the slightest ill effects from our endeavour to give them cholera." Now a few simple facts of this kind are worth a whole volume of negative evidence, and they prove conclusively that the contagion of cholera lies in the evacuations, and that not only is water the chief vehicle by means of which it is spread, but that breathing, or perhaps swallowing, the emanations from these evacuations in a close atmosphere will also communicate the disease. Messrs. Simon, Parkes, Radcliffe, Aitkin, and other eminent authorities all hold these views.

Professor Pettenkofer holds that the cholera germ must reach the soil in order to develop itself, and that the cholera germs rise from the soil into the air, and from the air reach other men. But as Professor Virchow says:—"Even if this theory were perfectly established it would not follow from it that cholera is not infectious, but only that it was indirectly infectious. It would always be

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necessary to have fresh human beings who cultivate in their bodies the germs they have received, and give them back to the soil." Moreover the views of Pettenkofer show clearly the necessity of cleanliness and proper sanitary arrangements—as he says there must be the germ and there must be the soil; if a single case of cholera be imported into a place where the ground is reeking with organic matter, the water polluted with excrement, and the air tainted with the effluvia of putrefaction, the germs will find a favourable soil, and give rise to a severe epidemic; whereas if the same occur in a town where the streets and yards are regularly cleansed, the sewerage is good, and the water pure, a few cases may follow from immediate contagion, but the plague will fail to establish itself. England is now alive to these considerations; but, unfortunately, France and some other Continental nations are not. If the enemy, in spite of all precautions, should succeed in effecting a landing in our midst, the chances are that it will in a short time perish from starvation. No doubt the views of Pettenkofer contain truth in them, but not all the truth. He thinks that cholera germs brought on board ship would die out in a few months; whereas epidemics have taken place on board ship, first cases occurring after a voyage of over a month; and his explanation does not meet these cases.

The most recent discoveries in connection with cholera have been made by Dr. Koch. He has found a distinct bacillus peculiar to Asiatic cholera. These bacilli were found in all the intestinal discharges of cholera cases and in the contents of the intestinal canal, but not in any other disease; and he is of opinion that they are the cause of the disease. He has shown also that these bacilli propagate themselves in a most prolific manner on damp linen, and that water is a most excellent medium for transferring the germ. Dr. Koch has found this cholera bacillus in the bodies of patients at Toulon, and says that the disease is undoubtedly of Asiatic origin, and will probably extend from the South of France to the Continent of Europe. There appears then to be little doubt that cholera may be carried from one place to another by persons ill with the disease, and that the poison is contained in the excrements passed by the patient. If a small quanity

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of these discharges find their way into water, it may impart to enormous volumes of water the power of propagating disease. It is also probable that, as Dr. Snow says, "Cholera patients cannot communicate the affection to others unless by means of the discharges which they pass. Persons attending them run no risk, provided they are protected from swallowing the organic poison passed by the sick; but in badly ventilated rooms this organic matter may be disseminated in such considerable quantities that the atmosphere may be taken into the system by the attendants." It may also be assumed that the virulence of the choleraic discharges may be greatly intensified by bad sanitary conditions, and very much diminished by good scavenging and cleanliness; and that in this climate the cholera poison tends to be restricted to places where the discharges of the patients are received, instead of being scattered aerially as they may be in tropical countries. In spite then of divergent views as to the etiology of cholera, we can all agree upon one point, that is, on the paramount duty of cleanliness, on the necessity of removing all filth from our houses, our towns, and our ships; and looking well to the sources of our water supply—by following out in fact the saying of the late Lord Beaconsfield—"*sanitas sanitatum omnia est sanitas.*"

It may, perhaps, be as well to say a few words on the ordinary symptoms of cholera, so that they may at once be known if the disease should break out on a ship with no doctor on board; they are unmistakeable. We have seen that cholera is a poison which absorbed into the blood will produce disease of the blood, and undergo enormous multiplication in the living body of the patient, and that changes are induced which, as Shakespeare wrote 300 years ago :—

"Its effect
Holds such an enmity with blood of man
That swift as quicksilver it courses through
The natural gates and alleys of the body;
And with a sudden vigour it doth pass
And curd like eager droppings into milk
The thin and wholesome blood."

It is generally characterized by premonitory diarrhœa for a few days; this is succeeded by sickness and vomiting, with a profuse

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discharge from he bowels. These are attended with violent cramps, severe pains down the thighs, and a profound sense of exhaustion. The skin becomes icy cold and damp, great thirst is felt, and finally the unfortunate patient sinks into a state of complete collapse, from which he may or may not recover, as the case may be.

As far as treatment is concerned, it is well to know that in many cases, if the premonitory diarrhœa can be checked at once, the disease is often cured. The most reliable drug for this purpose, and one that is always on board ship, is opium. Let one opium pill (pill saponis Co.) be taken after each motion for three times, or 20 drops of laudanum. At the same time apply a large mustard poultice to the stomach and belly, put hot water bottles, or bags of hot salt, to the feet, and give a little hot brandy and water. The cramps may be best relieved by well rubbing the limbs. Whilst the attack lasts very little fluid should be given, but if possible ice should be sucked to alleviate the thirst and check the vomiting. If the symptoms are relieved, the same medicines may be continued three or four times a day. On ships where there is a larger supply of medicine than the official list requires, pills, containing 4 grains of Acetate of lead and 1 grain of opium, may be given instead of the above for three doses, or the following prescription we have found very efficacious if the diarrhœa persists :—

| | | |
|---|---|---|
| Acid Sulphuric dil., | 2 | drams. |
| ,, Nitricum ,, | 1 | ,, |
| Tr. Opii | 1 | ,, |
| Sp. Chloroformi | 3 | ,, |
| Water to | 8 | ounces. |

$\frac{1}{8}$ part to be taken for a dose every two, three, or four hours, according to the urgency of the symptoms.

In the convalescent stage of cholera and during the period of premonitory diarrhœa the diet should be restricted to slops, such as arrowroot, rice, sago, &c. Perhaps rice is about the best of all food both in cholera and diarrhœa, and there is very often plenty of it on board ship, often as cargo. The following is a recipe for preparing it given by an Anglo-Indian: "Put a saucepan containing two

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quarts of water upon the fire; when it boils add first a table-spoonful of salt, then a pint of Rangoon rice that has been washed in cold water. Let it boil 20 minutes, throw the rice into a cullender and strain off the hot water, then dash over with cold water, or put it for a moment under the tap and strain once more; now put the rice back again in the dry saucepan, and cover it over with a cloth, and let it stand a few minutes near the fire till required for dishing up. Every grain will be well boiled, but each separate and distinct instead of mashed up together." The best fluid to give is rice water, and this may be prepared as follows:—"Add a dessert spoonful of rice for each pint of water, let it boil for three or four hours, strain and flavour with lemon juice and sugar." This is a very common remedy for choleraic diarrhœa in India and the East. Rice is very readily digested, and that part that is not absorbed in the system passes through the bowels without causing any inflammatory symptoms.

We will now say a few words on the preventive treatment and the sanitary measures to be adopted. When a ship arrives off a port where cholera is prevalent, the crew should have as little communication as possible with the shore, and a dose of quinine may be served out every morning; the ship should be moved as far as possible from the shore. Eating unripe fruit should be strictly avoided, and great care must be exercised that no tainted food of any description be given. Above all, unless absolutely necessary, no water should be taken on board from the infected district. If the disease should break out on the voyage, no water should be drunk unless previously boiled, and, if possible, filtered. A good filter should be considered a necessary part of the equipment of every ship. It is also a good plan to put a few drops of Condy's fluid into the drinking water. The sick men should be isolated from the rest of the crew—in moderate weather it is not a bad plan to put them in one of the boats, protected by an awning. All discharges from the body should at once be thrown overboard, and the utensils purified. Their usual clothing should as soon as possible be put into boiling water. The sleeping places for the crew should be kept scrupulously clean, and washed out every day with water, in which carbolic acid has been mixed, or Condy's fluid may be used instead. White-washing the different

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rooms is also strongly to be recommended, and good ventilation should be insisted on. The bilge water should be pumped out every day, and a mixture of some disinfectant thrown down. Chloride of zinc in the proportion of about ten parts to 25 gallons of water answers this purpose very well, or carbolic acid, 1 part to 20 of water, if there is sufficient on board. When the disease has abated, it is a good plan to collect all the clothing, beds, &c., in one compartment, close all the hatchways, and burn sulphur in iron pots or in a stove. The clothing actually worn by the sick men should be destroyed. There is no more potent agent in producing cholera than fear—the captain should, therefore, do all in his power to keep up the spirits of his crew, and by providing them with cheerful employment prevent them from brooding over the disease.

It is to be hoped that the captains and owners of all ships will follow the example of the *St. Dunstan*, and before reaching port will take means to communicate with the sanitary authorities, who will use all the means that lie in their power to prevent the disease from reaching our shores. The law, however, gives them scarcely sufficient authority—they may detain a vessel for the purpose of disinfection and prevent any of the sick men from landing. They have no power, however, to keep any apparently healthy men from coming on shore—consequently it is quite possible that members of the crew or passengers may have the germs of cholera in their system which will subsequently develop. It is a serious question whether the law should not be so extended as to allow both sick and apparently healthy to be kept in supervision for a few days either on board ship or in some proper place ashore.

The system of quarantine has been tried and found wanting, it proved not only an intolerable nuisance and injury to commerce, but it has never succeeded in preventing the spread of cholera. The German Government have now followed the example of England, and rely on a system of rigid medical inspection. By order of the Local Government Board, issued in 1883, the sanitary authorities have the power of causing any ship coming from an infected district to be inspected by the medical officer of health.

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If cholera or choleraic diarrhœa be discovered, the patients can at once be moved to any hospital provided by the authorities, or if not fit to be moved be detained on the ship. The ship itself can be detained until the process of disinfection has been thoroughly carried out by the sanitary authorities. It is Art. 12 of the Order which is called in question. "The medical officer of health shall as soon as possible after any such ship has been certified to be infected with cholera, examine all persons on board of the same, and all persons who shall not be certified by him as hereinafter mentioned (that is, suffering from cholera), shall be permitted to land immediately on giving their names and the places of destination." We cannot but consider that the law in this respect is altogether inadequate. It is now well established that a person may take about the cholera with him for a few days, without knowing that he has it, and without a medical man being able to say that he has it. Suddenly he falls a victim to the disease when the bacillus has reached a certain part. It would be well, therefore, for the security of the community if fuller power were at once given to the sanitary authorities by Order in Council. Dr. Koch must be now considered our greatest authority on cholera, and he gives it as his opinion that if a case of cholera have appeared on a vessel on its passage between Asia and the Suez Canal, it ought not to have a clean bill issued, or be allowed to continue its course until the crew and passengers have remained a sufficient time under medical inspection. There is no doubt that England's action in this respect is considered rather lax by foreign nations, and that they have some ground for this opinion.

W. SPOONER, L.R.C.P., Lond., M.R.C.S.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. IX.

SEPTEMBER, 1884.

## THE ACCOMMODATION OF SEAMEN ON BOARD SHIP.

THERE has been for some years past much controversy about the character of the British seamen, many shipowners and shipmasters strenuously maintaining that in every way he has retrograded since the development of steam navigation and the abolition of the compulsory apprenticeship system, others who should be at least as well informed holding that the merchant sailor of to-day is, on the whole, a better man than his predecessor of twenty or forty years ago. If the average sailor is not in all respects able to perform those parts of his duty connected with the sails as well as they were done in the days when sail propulsion was solely depended upon, he is, say they, in physique and general intelligence much superior to the old sailing-ship seamen. It may be that the truth lies between the two opinions, and that while Jack is perhaps as good or better than he was twenty years ago, he has not in any respect improved as much as the average workman has in the same period, not nearly so much, for instance, as the agricultural labourer, and certainly not by any means as much as the seamen in the Royal Navy. In an able novel, written by Messrs. Besant and Rice, we



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remember a description of a drinking and dancing saloon at Portsmouth in the time of the Crimean War, evidently drawn from the life, and not overdrawn, and then the writers say in words that we are not able to quote exactly, that the Royal Navy Jack of the present day is a different being altogether from the men they have been describing. He now has opinions on religion and politics, wears the blue ribbon, and invests money in the Post Office Savings Bank. The great improvement is, we believe, due largely to two causes, the training of boys for the Royal Navy, and the continuous service system, by which the boy who has been trained for the Navy is not turned adrift when his ship is paid off, but is kept on in continuous employment, and looks forward to spending the concluding period of service comfortably in the coastguard, finishing up with a retiring pension. Similarly the companies in the merchant service which secure the best seamen are those lines which to a large extent take the same men voyage after voyage with but a very small interval on shore. One cause, however, of the great improvement of seamen in the Royal Navy is undoubtedly the very much greater regard paid by the Admiralty, of late years, to their comfort on board ship, and may we not be permitted to suggest that in spite of much that has been done in this matter in the Mercantile Marine by legislation and otherwise, there is still room for great improvement, and that if Jack's quarters were more carefully looked after, Jack himself would be also much improved. It is sometimes the case that the shipmaster has been a voyage in the ship, and will confess that he has never seen the inside of the forecastle. If reminded of his duties in this respect, that having the control of his men at sea, he is, at least, to some extent responsible for their comfort, he will probably exclaim :—" Oh, yes, we will fit the forecastle up with a Brussels carpet and spring couches, and then they'll complain because there isn't a piano." Some shipmasters will tell us, as one did recently in our own pages, that the English sailor is now worthless, and that the best thing is to ship foreigners, Norwegians and Swedes, if you can get them. We do certainly believe that no better and steadier men can be got than Scandinavians, and we also know from personal observation, that in no ships is the accom-

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modation for the seamen better than in their vessels. Go into the deck-house used as the forecastle, even of a Norwegian timber ship, which would be refused the lowest class at Lloyd's, and you will see that for tidiness, cleanliness, and comfort, the seamen's accommodation is well attended to. You will not see the spring couches or the Brussels carpet, but you will often see curtains to the bunks and even to the windows. It may be that the character of the men is more the cause than the result of the tidiness and cleanliness of their quarters,—anyhow, the two things go together.

Believing that the question of the proper accommodation of the crew on shipboard is of great importance as affecting the character of the men, their efficiency as seamen, and to some extent the sea-worthiness of the ship, we propose in the present paper to describe existing legislation upon the subject, and to suggest some few alterations. At the same time it must, we think, be borne in mind that very little can be done in such matters by legislation, that permanent improvement is to be looked for rather by the awakening of a due sense of responsibility in owners and officers, and of increased proper self-respect in the men.

The legislation bearing upon the question of the accommodation of seamen is for the most part contained in the Merchant Shipping Act of 1867. The large Act of 1854, which is the basis of most of the legislation regarding the Mercantile Marine, dealt with the question in the first place by a clause having for its object the encouragement of the housing of the crew above the uppermost continuous deck of the ship. It was provided that any closed-in space on deck solely appropriated to the berthing or accommodation of the crew should be exempt from tonnage measurement, provided its cubic content did not exceed one-twentieth of the remaining tonnage of the ship. If its tonnage did exceed the twentieth, then the *excess* only was added to the tonnage of the ship. By this arrangement the crew space was an exemption, not as at present a deduction; it did not appear in the gross tonnage of the ship, whereas by the present rules it is included in the gross tonnage, but is afterwards deducted, and so is not included in the register tonnage. There are many vessels still on the register in which the crew space situated above the uppermost deck is an



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exemption and not a deduction. The Act of 1854 did not require any special fitting up of crew-space as a condition of exemption, all it did was to limit the exemption to spaces above the uppermost deck. It was considered at the time that lower forecastles were necessarily unhealthy, and that it would be better if owners could be induced to berth the crew above the upper deck. By the 231st clause of the Act of 1854 it was prescribed that in all places appropriated to the berthing of seamen or apprentices the space allowed for each should be 12 square feet on the deck and 72 cubic feet in content for each person berthed in it, except they slept in hammocks, when only 9 superficial feet and 54 cubic feet were required. It was prescribed that such places should be kept free from goods and stores, properly caulked, securely and properly constructed, and well ventilated, and penalties were prescribed for violations of these provisions. It will be observed that the exemption from tonnage measurement of the crew space did not depend in any way upon its being properly constructed and fitted, and perhaps owing to this, the clause had but little practical effect upon the condition of the accommodation for seamen.

The Act of 1867 on the other hand has been of very considerable value. It has made a deduction from register tonnage dependent upon the condition and fitness of the crew-space, and hence it has been to the interest of the shipowner to comply with the requirements of the law. Section 9 of the Act of 1867 contains the provisions with regard to crew-space. The first deals with the space allowed for each seaman, which must not, in any case, be less than twelve square feet on the deck and seventy-two cubic feet of space. The question has at times arisen whether the twelve square feet on the deck is, or is not, inclusive of the space occupied by the bunks of the seamen. It would appear by the words of the Act that it is, but as a matter of fact there is in most cases space appropriated to the crew much beyond the requirements of the Act. It may in this connection be useful to note that the space allowed for emigrants is never less than fifteen square feet for each statute adult. The twelve square feet are required to be, by the Board of Trade regulations, in such a place that they do really furnish accommodation. Thus, in the very narrow spaces at the

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bows of fine ships, where men cannot move about, the space, even though included within the boundary of the lower forecastle, is not considered as accommodation, because it is not possible to make use of it.

We quote the important clause dealing with the character of the crew-space :—

"Every such place shall be such as to make the space aforesaid available for the proper accommodation of the men who are to occupy it, shall be securely constructed, properly lighted and ventilated, properly protected from weather and sea, and, as far as practicable, properly shut off and protected from effluvium which may be caused by cargo or bilge water."

As regards secure construction, there is but little question in most new steamers, where the crew are usually berthed in the top-gallant forecastle, which by the rules of the registry societies has such scantlings prescribed for it that it is amply strong. The same may be also said of bridge-houses and of most of the houses on deck in new sailing-ships. The latter are usually constructed of iron, and are securely connected with the beams or iron deck of the ship. All deck erections are, however, not secure, and cases have occurred where a house has been struck by a sea and carried overboard with the men in it.

The question of lighting comes in chiefly in the case of lower forecastles, and the difficulty of properly lighting the lower forecastle in a small ship is one great objection to its being used as crew-space. To this we shall again refer in connection with crew-accommodation in small vessels. The test officially prescribed as to the proper lighting of crew-space is that ordinary print may be read in any part of it. In lower forecastles the light can often only be obtained by means of thick glass prisms let into the deck, they frequently leak and often get broken, and, therefore, care should be taken not to fit them over sleeping places. At best they give but a "dim religious light," and when smoked from below or tarred from above they are next to useless.

The next point: ventilation—is one of great practical importance and of no small difficulty. A vessel may be in the tropics one voyage, and the next at Newfoundland, or in the White Sea, and

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the ventilation which would be necessary in the one case is intolerable in the other. Further, the old-fashioned seaman as a rule does not like ventilation, he gets enough fresh air on deck or aloft, and he likes his sleeping quarters to be warm and free from draughts. We all know how difficult it is in high-pitched rooms on shore to secure fresh air without draught. A forecastle is often only six feet high and the fresh air has all to come from above, and it must be remembered that a room 12 feet by 6 feet has to accommodate six men. There is of course the advantage that it is easy to get a current of air through a ventilator when the ship is in motion at sea, and probably the supreme need of good ventilation is chiefly felt when in a foreign port.

The Surveyors to the Board of Trade are told in their instructions that the revolving cowl is generally speaking the best form of ventilator, that two cowls at least are necessary for each space, and that they should be as high as the bulwarks. Mushroom ventilators are to be discouraged, except in the case of deck-houses. Scuttles, companions, and doors are not regarded as ventilators. The main point appears to be to secure a current of air, by means which are available in all but extraordinary weather at sea. In the case of ships trading to tropical countries, the better plan would appear to be rather to increase the number than the size of the ventilators, because then some of them can be temporarily closed when not required, still leaving sufficient for ordinary temperatures.

The proper protection of the seamen's quarters from the weather and sea is another most important question, and does not always receive from owners and masters the attention it deserves. Jack has to keep watch and go aloft in all weather, and certainly he deserves a dry bunk, but very often does not get one. We heard of a case recently where in a steamer which was not twelve months old, half the sleeping places, both of officers and men, were dripping wet while the vessel was at sea in bad weather. She carried iron ore, and being of the dimensions now common in well deck steamers, was very stiff, and consequently in heavy weather took in a great deal of water both over the top-gallant forecastle and over the bridge-house in which were the officers' and engineers' berths. The decks had been laid with wet wood, and on

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the first voyage to the Mediterranean, had shrunk through exposure to the hot sun. The master had employed men at Malta to caulk the deck, but they had scamped the work, and the consequence was that there was hardly a dry berth in the ship. To still further aggravate matters, a room in the top-gallant forecastle which had originally been certified for the use of the crew had been appropriated by the master as a paint and oil store, and the boards of the bulkhead having open joints the smell of the paint extended through the forecastle. Some of the cowl ventilators washed overboard had not been replaced, but the holes were stopped up. The master had spent money to remedy some of the defects, and did not concern himself further as to the comfort of his officers and crew. This was the case in a comparatively new ship in which the accommodation for crew had at starting been good, and had been officially certified to. It is an illustration of the fact that no mere official inspection can secure proper care of seamen's quarters, unless either shipmasters and owners interest themselves in the matter, or else the seamen themselves intelligently exercise their legal rights and insist upon having proper accommodation.

The exclusion of effluvium from the crew's quarters is also an important matter, and merits more consideration than it frequently obtains. To ensure this it is necessary that the sides of the space, the ceiling or lining, should be made practically air-tight, as should also be the deck and bulkhead. There should be, if possible, no opening in the latter, and hatchways in the deck should be properly closed up. Especially is this necessary in the case of ships carrying coals, where explosions have often occurred, from the fact that gas given off from the coal near the bulkhead found its way into the crew-space. The drain pipes fitted to the crew-space, when it is below the upper deck, should have proper traps, and should be carried down as far as possible, in order that water running from them should find its way at once to the bilge. Proper traps are not those which will not act when the vessel is inclined under sail, and yet some such are supplied and fitted to ships. It is better to have a plug which will close up the drain-pipe when it is not wanted, than to have an inefficient trap. We

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have seen in large sailing ships where the crew were berthed in the topgallant forecastle, an arrangement which no owner would permit did he know of it; that is, where a water-closet or privy adjoins the after end of the topgallant forecastle, the latter drains into the bottom of the closet, and then the closet into the open waterway abaft it. The proper arrangement is to carry a pipe through the closet, so that the drainage from the forecastle discharges direct into the open waterway.

The law does not require the seamen's quarters to be fitted up in any way; but most owners, in addition to the necessary bunks, do have tables and seats fitted, and a stove is also usually provided. We are quite sure that anything further in the way of conveniences provided for the seamen by the owner is fully appreciated by them, and in the end pays the owner. We have seen in some steamers the place at the fore end of the forecastle, which is not available for any other purpose, bulk-headed off and made use of as a place for the seamen to hang up their oil-skin coats. This simple provision costing little and appearing to be hardly worth mentioning, must yet add materially to the comfort and health of the crew.

The Act of 1867 prescribes the proper construction, &c., of quarters for the crew, and provides that, in default, the owner is liable to a fine not exceeding twenty pounds. It also allows a deduction of their content from the register tonnage on it being certified by the official measurer that they are in efficient condition and properly marked. There is thus a penalty on the one hand and an allowance on the other. The allowance is, however, dependent further upon the provision of efficient privy accommodation for the crew, but the owner is not legally bound to make such provision unless he desires the allowance. Here, we think, an improvement might be made in future legislation, and this matter dealt with in the same manner as the other sanitary requirements. The law also requires the crew spaces to be permanently marked in such a manner as to clearly indicate their appropriation, and if any part of any place in which seamen are lodged is not kept free from goods and stores, the master is liable to be called upon to pay to each such seaman one shilling a day for each day after complaint has been made, till the goods or stores have been removed.

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The law directs that an inspection of a crew-space may be made upon the complaint of any person, that the inspector is to report any defects to the Collector of Customs, and then that officer will disallow any deduction which may have been made from the tonnage or take legal proceedings for the recovery of penalties as the case may require.

In regard to the tonnage allowance for crew-space, the Royal Commission on Tonnage in 1881 proposed some few alterations, of which the most important was that the master's room should be included in the deductions. It may be that the reason why this was not the case in previous legislation was that formerly the carriage of passengers in sailing ships was much more common than it is now, and that the passengers shared the master's accommodation as far as the mess room is concerned. The Royal Commissioners recommended that the master's room should be allowed, provided it was used solely by the master or crew. The adoption of this recommendation would be a great boon to the owners and the men employed in small coasters. Many of these vessels have only two or three hands altogether, the master is but little above the seamen, and it would much conduce to their comfort if they could all mess together and sleep in the cabin at the after end of the vessel. It is often the case in these vessels that a large lower forecastle is fitted up, properly lighted and ventilated, and not used by the crew, while the place aft, in which the master and crew reside, is not certified for deduction from tonnage, and is often in a bad condition. The men prefer to be together, and they like the after part of the vessel best, because it is dryer and can be lighted by a skylight, which would often be impracticable in the case of the forecastle. It has been proposed to fix a limit to the allowance for crew space, and the Suez Canal tonnage rules do, in fact, limit it, as do also the rules of some foreign Governments. In the former case the allowance made for crew space, together with spaces necessary for the navigation of the ship is limited to five per cent. of the gross tonnage. As a matter of fact very few vessels which go through the Canal have sufficient crew space to give them the five per cent. deduction. The space appropriated for crew does, however, in small vessels often exceed five per cent. of the total tonnage, and

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if it did not it would certainly be insufficient for the necessities of the case.

The tonnage rules of other countries which are based on the English system with slight differences in some details, for the most part limit the allowance for crew space to five per cent. of the gross tonnage of the ship. The Government of the United States, which was the first to adopt the English tonnage system, did not for some years allow either engine-room or crew-space, but made the gross tonnage of the ship also her register tonnage. In 1882, however, an Act was passed admitting of deductions from the tonnage, but limiting the allowance for crew-space to five per cent. of the gross tonnage.

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## THE MANCHESTER SHIP CANAL.

THE rejection of the Manchester Ship Canal Bill by the House of Commons Committee, to whom it was referred during the recent sessions of Parliament, must have produced no small degree of disappointment among its advocates and supporters. The scheme for connecting Manchester with the sea had been carefully elaborated, a strong array of evidence, both scientific and commercial, had been brought forward in its behalf, something like £90,000 had been expended in its preparation, a Committee of the House of Lords had reported in its favour, and everything pointed to a successful issue; but, in spite of all this, the fates proved unpropitious, and the project fell to the ground.

This result has come to pass, not because the Committee were persuaded that a ship canal is in itself unnecessary. It is true, that a certain amount of evidence to this effect was produced by the opponents of the measure. It was also alleged on their behalf that the amount derived from the carriage of merchandise by the railway companies is less than half-a-million per annum, and that, therefore, a canal constructed at the vast outlay which would be involved in such an undertaking as this, could not possibly be

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made a commercial success. It is evident, however, that this estimate must be taken with a very considerable grain of salt. The capitalists, who so readily undertook to provide the necessary means for constructing the canal, had studied the subject from a different standpoint to this; and it is not likely that the decision of the Committee was at all influenced by the question of the commercial futility of the scheme. No doubt the construction of a ship canal 300 feet in width over the distance of twenty-one miles between Manchester and Runcorn, the maintenance of a channel 1,000 feet in width and 12 feet in depth at low water through the sands in the upper portion of the Mersey estuary, and the erection of sufficient locks to effect a rise of 60 feet above Runcorn would involve a serious outlay. But, notwithstanding the great weight of the undertaking, it is tolerably certain that the amount of merchandise passing to and fro between the Manchester district and the sea would be sufficient to render the canal a tolerable financial success; and if this question had been the only one for consideration, the Bill would certainly not have been allowed to drop.

The reasons for the rejection of the measure were of a more weighty character than the mere regard for the interests of those who wish to invest their money in the undertaking, and consist almost entirely in the possibilities of permanent and serious injuries being caused to the Mersey estuary by the construction of the proposed works. It was alleged by scientific witnesses of great authority that the "fixing" of a permanent channel in the upper portion of the estuary would have the effect of reducing the tidal capacity of the Mersey, and that the result of this would be an injurious effect upon the bar at the entrance to the harbour. As is often the case, however, when technical evidence is called, the witnesses on the opposite side were not less confident that no injury of the kind would be caused. Both sides, it is true, were agreed that a reduction in the tidal capacity of the Mersey would have the effect of increasing the bar; but the supporters of the scheme maintained that the proposed works would not cause any serious reduction. It was around this point that the whole question seemed to turn; and, looking to the conflicting nature of the scientific evidence which was produced,

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the Committee seem to have done wisely in allowing the late scheme to drop. The learned doctors differed widely; and, this being the case, it was not likely that the Committee would accept the responsibility of deciding in its favour. The interests at stake are much too serious to permit of any uncertainty on this point. If a ship canal is to be constructed, its promoters will have to devise some method which will entirely preclude the possibility of inflicting any injury upon the lower estuary; and until they can do this, they will assuredly not obtain permission to commence the undertaking.

We observe that the advocates of the scheme show no intention of relinquishing their efforts in its favour. At a recent meeting held at Manchester they unanimously resolved to continue its promotion. Mr. Adamson, the Chairman of the Provisional Committee, who presided, stated that the Manchester Corporation were prepared to share the work of introducing a new Bill; and the subscribers to the fund for the late measure now intend to invite the co-operation of other towns and boroughs in the neighbourhood. Indeed, there can be no doubt as regards the earnestness of the promoters. They allege that of the entire cost of transport between Manchester and Calcutta, more than half is now incurred before the goods are placed on board ship in the Mersey, and that the work is absolutely necessary to enable Manchester to compete with foreign manufacturers. Unquestionably the railway charges are at present high; while the dock and harbour rates and dues at Liverpool are somewhat heavy as compared with those in force at most other ports in the United Kingdom. That this should be the case is unavoidable, as the advocates of the Ship Canal are quite willing to admit; but they plead that the trade of Manchester is being carried on under an increasing force of foreign competition, and that any reduction which can be made in the charges by which it is now beset, is a consideration of great importance.

It is not surprising that the scheme should have excited a certain amount of apprehension at Liverpool, quite apart from the question of the physical disadvantage that might arise if it were carried into effect. The town is naturally somewhat adverse to a project which seems calculated to deprive it of some portion of its trade; and the disappointment produced at Manchester by the rejection of the

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Bill has, doubtless, been counterbalanced by the satisfaction experienced from the same cause in the neighbouring town. At the same time it should be stated that the Mersey Docks and Harbour Board as well as the Liverpool Corporation have both declared their intention of abstaining from offering opposition to any scheme that may be formed for connecting Manchester with the sea, provided no injury to the estuary is threatened; and in doing this they have taken up what is, in our opinion, the only judicious and tenable position upon the subject. On no other ground can valid objections be raised; and, further than this, it seems to us that on no other ground is objection called for. There is no risk of any permanent commercial disadvantage to Liverpool arising from the construction of a ship canal, the general increase of trade to other parts of the country being quite sufficient to compensate for any falling off that is likely to take place in this direction. The railway companies who are interested would, of course, be more seriously affected, and it is not difficult to understand why they should have so strenuously opposed the Bill. They are more directly concerned in preventing the accomplishment of an undertaking which would come into close rivalry with their lines; but, except in the case of the London and North-Western Company, who own the docks at Garston, it is easy to see that their opposition is more or less vitiated by motives which would not bear a very close scrutiny. The Garston docks are, of course, as likely to be prejudicially affected as those at Liverpool; indeed the Directors of the North-Western Company have expressed the conviction that if the proposed canal were made the former would have to be closed altogether.

In spite of the great opposition that was offered to the late Bill it is quite certain that some vigorous efforts will yet be made to obtain Parliamentary sanction to a somewhat similar measure. The promoters claim that Manchester is as much interested as Liverpool in guarding against any injury to the estuary; but this contention must be taken for what it is worth. Manchester may be interested; but, after all, it is only at second-hand, for if the contemplated works proved to be the physical ruin of the Mersey as a port, no doubt some means would be devised for remedying any inconvenience that Manchester

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might experience in consequence. We do not suppose that any such grave consequence as this is likely to result; but at the same time it is essential that all risk of injury shall be avoided. The Mersey has a very changing and unstable character, as is shown by the extensive alterations which are about to be made in the positions of the lightships and buoys marking the fairway. A complete re-survey of Liverpool bay has been made by the Acting Conservator and his colleagues; and it has been found that, owing to the changes which have taken place, a complete re-arrangement of the buoys and light-vessels must be made. This fact serves to illustrate how readily the bar might be affected by any serious modifications of the natural currents, and shows how essential it is that the utmost caution should be observed in carrying out any works by which these are likely to be influenced. Whether the promoters, either by conducting the canal along one side of the estuary, or by any other plan, will be able to satisfy Parliament that no injury will be caused, remains yet to be seen.

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## RULE OF THE ROAD AT SEA.

WE print elsewhere the revised Regulations for Preventing Collisions at Sea, and as a useful commentary on the changes now made in the law, we extract the following remarks from the fourth edition of Mr. Gray's Book, which has been revised and brought down to date* :—

"*Distress Signals.*—The signals of distress named in these Regulations (Art. 27) are now international. If the master of a ship hereafter makes a signal of distress when he only needs a pilot, he must not blame parties who may come out to him from the shore

* "Rule of the Road at Sea." London: Pewtress & Co., 28, Little Queen Street, Lincoln's Inn Fields, W.C.; J. D. Potter, 31, Poultry, E.C.; C. Wilson (late Norie's), Minories; Kent & Co., 23, Paternoster Row; George Philip & Son, 32, Fleet Street, London, E.C. Liverpool: Philip, Son & Nephew, 49 and 51, South Castle Street.

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in answer to those signals if he finds that a claim for salvage services is lodged against him. On the other hand, if his ship *is* in distress, he must not be surprised that assistance is not rendered to him if he uses as signals 'blue lights,' 'Roman candles,' &c., &c., for those things are not signals of distress.

"*Not Under Command Signals.*—These signals (Art. 5*a*) are not to be confounded with or used as signals of distress. These 'not under command' signals are to be used for the purpose of warning all vessels seeing them to keep out of the way of the vessel showing them. And whenever the officer of the watch sees a ship displaying them he should give her a wide berth. If she needs assistance she will show signals of distress. One of the few complaints which have come to my knowledge is, that ships showing the 'not under command' signals are constantly borne down upon and endangered by ships desirous of rendering assistance. It is to be hoped that the reader of this will fully understand that it is his duty to keep out of the way of vessels showing them in future.

"*Telegraph Cable Ships.*—Special signals are provided for ships when at work on Telegraph Cables (Art. 5*b*); these signals likewise are displayed for the purpose of warning other ships to keep out of the way.

"*Porting and Starboarding.*—There has been great difficulty as regards these words. In some countries 'starboard' means not to put the helm to starboard, but to direct the course of the ship to starboard; and 'port' means, not that the helm shall be put to port, but that the course of the ship shall be directed to port. To leave no room for mistakes in translation in the future, the wording of the only article in the whole of the Regulations which used to contain the injunction to port the helm (Art. 15) has been altered, so that it now stands: 'If two ships under steam are meeting end-on or nearly end-on, so as to involve risk of collision, *each shall alter her course to starboard*, so that each may pass on the port-side of the other.'

"*Moderate Speed.*—Vessels are to go at a moderate speed in thick weather (Art. 13). 'Moderate' speed is not defined by the Regulations. The master of a steamship must therefore use his

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own discretion as to moderation under the circumstances. He has to bear in mind that he will certainly have to justify his conduct in a Court of Law or before the Wreck Court, if his ship comes to grief, or causes damage to another ship in 'fog, mist, or falling snow,' unless he can prove to the Court that he was proceeding at a 'moderate' speed. And as regards a sailing-ship under like circumstances, the master will have to explain in Court what steps he took to reduce the speed of his ship, and that the speed was 'moderate.' These remarks do not apply solely to cases of collision; and in future, even in cases of stranding in thick weather, the master may endanger his certificate if he goes ashore at a speed which is, in the opinion of the Court, not 'moderate.'

"*Drifters' Lights.*—An important alteration effected by the new Regulations is as to the lights to be carried by fishing vessels drifting with their nets. Drift nets are of great length, sometimes measured by the mile. The boats are in future to show two white lights 'diagonally' (Art. 10*b*). If compensation is claimed for the destruction of nets in future one of the points strongly against the claim will be neglect to show these distinguishing lights. Drifters should note this for their own sake.

"*Trawlers' Lights.*—Sailing trawlers under way whether they have their trawl beam in the water or not are required by law to carry and show the coloured side-lights like any other sailing ship (Art. 3), and steam trawlers are required to carry the masthead light in addition like any ordinary seagoing steamship. But the trawlers as a rule defy the law, and carry one bright white light when under way trawling. The owners, masters, and crews of trawlers are well aware that the bright white light is the distinctive light of a pilot vessel and of a vessel at anchor, and of a vessel being overtaken.

"The officer in charge of the deck should be very careful therefore what he does when he sees a bright white light. If by want of proper look-out, or by neglect to slow in time, or to stop and reverse if necessary, he runs down a trawler showing this illegal light he may in Court be held to blame for collision; but if, having kept a good look-out and having done all that can be reasonably expected, he runs down a trawler under way, having been led by

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her white light to think she was a vessel at anchor, or a pilot vessel, the blame for the collision rests on the trawler.

"The Board of Trade have been anxious that trawlers at work should have a distinguishing light. The trawlers however say they will carry nothing but a single white light, and as they are not allowed by law to carry that light, they are in the position of an interest that knowingly and wilfully breaks the law, and, moreover, they do it with their eyes open and in full knowledge of the consequences and responsibilities. That however in no way relieves the officer of the watch of an approaching ship from keeping a good look-out and doing his best in every way to prevent collision.

"*Unauthorised Lights and Sound-signals.*—There are at the present time before the public many proposals for 'helm-signals,' 'steering-lights,' 'compass course-signals' and so forth. I must warn masters and officers of vessels that if they show any lights not authorised by the Regulations, they may get into serious trouble. The Regulations are explicit, the lights mentioned therein, 'and no others,' are to be carried. I must also caution the reader that if in 'fog, mist, or falling snow,' he uses the fog-whistle and horn to make any other sound-signals than those specially named in Article 12 or Article 10*g* (fishing vessels), and if a collision follows, he may be held to blame for departing from the Regulations; and, if so, the collision may be held to be due to his wrongful act or default."

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## INSTITUTE OF LONDON UNDERWRITERS.

AMONG the many items connected with shipping which, from time to time, are reviewed in the columns of this magazine, the establishment of an Association of Underwriters, likely to take the lead in the underwriting world of the future, appears worthy of notice.

We pointed out in our pages some months ago that the institutions known as "Lloyd's," and as "the Committee of *Lloyd's Register*,"



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though started in the interests of underwriters, now include shipowners as well; and that in the case of the Registry Committee the shipowners have a preponderating voice.

The underwriting community of London has, therefore, only existed in its constituent parts and, although the interests of all concerned are identical in nature, it is only within the last month or two that an association has been formed to bind these parts together, able to co-operate for their body as a whole.

The Committee of the new Institute are:—Lawrence D. Smith, Esq., Chairman, Indemnity Mutual Marine Assurance Company; Alfred Tozer, Esq., Deputy Chairman, Universal Marine Insurance Company, Limited; H. J. Bristow, Esq., New Zealand Insurance Company; Edward Davies Browne, Esq., Royal Exchange Assurance Corporation; Robert J. Lodge, Esq., Marine Insurance Company, Limited; J. H. Lukis, Esq., Thames and Mersey Marine Insurance Company, Limited; J. S. Mackintosh, Esq., The London Assurance Corporation; Edward W. Nicholls, Esq., Alliance Marine Assurance Company, Limited; J. Carr Saunders, Esq., Commercial Union Assurance Company; and their offices are at 4, Royal Exchange Buildings.

The subscribers to the Company include the principal and very best assurance companies and associations in the world.

The necessity for such an Association is manifest when we find that the sum for which underwriters and underwriting bodies, in London, alone rendered themselves liable last year amounted in round numbers to £600,000,000.

Judging of the magnitude of underwriting represented by these figures expanding, as it has done, to meet the increase of shipping during recent years all over the world, it is a matter of surprise that such an Association as the one under review has only now sprung into existence; the importance of such an Institute as the head centre of a body so intimately connected with the trade of the country must be apparent to all concerned, and we feel confident that in the future it will prove a real power upon all matters connected with shipping.

The objects for which the Institute is established, appear to be of

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a definite, though not of an altogether confined character: stated shortly they are as follows:—

1. To procure and furnish to the members of the Institute interesting information or intelligence.

2. To discuss and report upon subjects of interest to underwriters.

3. To promulgate and support the views of the Institute on such subjects.

4. To promote or oppose legislative or other measures affecting themselves.

5. To investigate, and, as far as possible, prevent frauds, &c.

6. To promote, advance, and protect the interests of underwriters generally.

With regard to the majority of these objects nothing need here be said; they are in accordance with those of Associations of a similar character elsewhere, and are framed for the mutual protection and information of the members of the Institute.

Upon the other hand, bearing in mind contemplated legislation, any movement or combination tending towards the protection of property, reacts upon the more humanitarian question of preservation of life; as an indirect force, therefore, in preventing the annual deplorable loss of life, we shall watch the growth of the Institute with very great interest; the more underwriters combine for the protection of their own interests, the greater will be the reason for those individuals (characterised by our able contemporary the *Shipping Mercantile Gazette* as "black sheep") amongst the great body of shipowners, to bring their ships safely into port, rather than face the ordeal of public opprobrium which could be brought to bear upon them by means of the machinery of the Underwriters' Institute.

We wish, therefore, the Institute every success, and trust that it will eventually answer the expectations of its authors, and fully carry out those objects for the furtherance of which it is incorporated.

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## CHARTS AND SAILING DIRECTIONS.

ON resuming our observations on charts and sailing directions the attention of our readers, who are intérested in the subjects of hydrography and surveying, may be called to an excellent little work, usually known as "The Admiralty Manual of Scientific Enquiry," prepared for the use of officers in H.M. Navy, and for travellers in general; and to a no less useful publication entitled, "General Instructions for the Hydrographic Surveyors of the Admiralty," originally drawn up by Captain, afterwards Admiral, Sir Francis Beaufort, and improved in subsequent editions: they may have no practical value in expediting a voyage; but they are full of information and facts that may at any moment be useful to the sailor, tending to cultivate his mind, and to give him a high idea of the seaman's art and methods.

A chart is the map of the hydrographer, specially designed for the requirements of the navigator to the end that he may safely pilot his ship out of port, safely conduct her across the ocean, and safely guide her to the port of destination.

The conditions of a good chart are such that a mere abstract of its details might well fill several pages of description. Briefly told,—"an efficient chart must indicate much more than a mere outline of the shore with its general soundings and off-lying dangers. At a glance it should convey to the eye, not only the relative position of the principal points and inflections of the coast, but its varying character—whether springing abruptly from the sea in precipitous cliffs, or rising in bold acclivities, or in gentle slopes—whether broken into scattered points of rock, or throwing itself out in salient prongs and shelving ledges—whether its bays are encumbered with foul ground, or lined with a smooth open beach—and especially whether it is easily accessible, with regularly decreasing soundings, or fronted by intricate banks, and unconnected reefs, which to pass through or to avoid, require a well-concerted series of sea-marks.

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The extent of the shoals, with the limits of the intervening channels, should be so manifest; the set of the tides so consistently expressed; and the directions so terse and simple, that by the rapid opening or closing of the marks, and the fulness and sequence of the soundings, the mariner should be able to trace the movement of his vessel in every fresh cast of the lead, and thus to feel his way with equal decision, promptitude, and confidence."

All the remarkable objects by which the coast may be recognised, and by which the position of any port or other locality may be known, either at a distance when the weather is clear, or close in when haze or mist prevails, should be carefully delineated; the capabilities of the coast for affording shelter to shipping; the navigable rivers, harbours, and inlets; the form and elevation of such hills as are visible from the coast and the offing; the direction of the valleys and ravines; the places where these pour any torrents into the sea; the jutting headlands or deep sinuosities, or low undulating country with its lagging streams and muddy or sandy fringe of coast; its shallows, bars, and deltas, each as the case may be—with its lighthouses, beacons, buoys, and landmarks, stating the distances at which they may severally be seen—with even the forts, towers, churches, spires, and little clusters of cottages or huts upon the inland elevations—with such other varied features as the coast may present, and as may serve to convey a correct idea of what may be expected to meet the eye of the navigator, or be required to keep him clear of danger and to guide him in safety.

In short, during the whole progress of a survey, it should be steadily borne in mind, that with whatever skill and labour it may be executed, it is only the means to an end; and that its real merit will less depend on the science and taste which have been employed in its construction than on the practical utility of its results . . . for what the seaman chiefly wants is a chart exhibiting at one view all that may be necessary for the immediate conduct of his vessel; and to have that graphically and perspicuously expressed without indecision and ambiguity—such as clear channels, easily seized leading marks, well defined shoals, and with the usual anchorages marked.

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When a coastline with its outlying dangers has been carefully surveyed, the accuracy of a chart of the locality is more commonly affected through the establishment of new lights and buoys, or through changes in the character and position of the old ones. It may also be that, in process of time, through inattention to the secular change in the variation of the compass, that element may be incorrectly noted. Occasionally a new rock or shoal may be discovered in an unsuspected position: this last is really the most serious danger, and especially so if it lies anywhere near a fairway. There is also the danger of shifting sands, when the sands fringe a coast, and also when they abound in an estuary leading to an important port.

In respect to changes in lights, and the establishment of new lighthouses or light-vessels, these should always be anticipated, and thus provided against; for none of the lighthouse authorities, with the exception of the Trinity House, give sufficient warning of the intention to alter an old light or introduce a new one. A light may lure to destruction in solitary instances, but it is questionable to what extent the establishing of a new light should be held as a valid excuse for the casting away of a vessel when, through bad navigation and nothing else, ten to twelve miles has been lost in the reckoning in a run of sixty to seventy miles. Changes in buoys cause, or are said to cause, loss; but the remedy in this case is simple by the unanimous agreement among the maritime nations of a uniform system of buoyage, such that certain characteristics shall invariably distinguish particular dangers.

The motto of our Magazine for the first five years of its existence was as follows:—

"*There are no charts of any part of the world so accurate, and no directions so perfect, as not to furnish frequent occasion for revision and amendment.*" The remark is strictly correct, and especially applicable to the case of the *occasional* discovery of an unsuspected danger in a fairway channel. The most careful surveying and sounding does not always eliminate a danger—be it rock or shoal—of this description; and when the discovery results in the loss of a valuable ship, the master is utterly blameless. The case is wholly different, however, when

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a vessel has, without good cause—through stress of weather or a breakdown—been brought near to a dangerous locality; for instance, a vessel was lost in the Mediterranean through approaching too near to a well-known group of islets. The master had been using the chart of one of the private publishers; but the islets were properly placed on the chart, with the usual marks indicating shoaler water than in the fairway of the channel between the mainland and the islets. The stranding occurred on an uncharted and hitherto unknown rock, which, however, lay within, or close to, the dangerous area. The discovery of the rock, until then unknown, since it was well out of the fairway of the navigable channel, availed nothing to exonerate the master, and the Court—one of the superior ones—considered the vessel to have been lost through bad navigation, and judgment was decreed accordingly.

We have frequently had occasion, when showing that the private charts are not copies from Admiralty publications, to explain the system of chart correction, when on any given day a batch of "Notices to Mariners," that require immediate attention, arrives in London. With rubber, ink-eraser, and pen and ink, a skilful draughtsman and hydrographer will, in a few hours, transform erroneous into accurate charts, inserting on each chart all the necessary corrections as indicated through the establishment of new lights or buoys, or from the discovery of any hitherto uncharted rock or shoal. The private publishers are in no way dependent on the Admiralty "Notices," but receive foreign notices equally with the Admiralty; and thus they are generally quicker in the field with their corrections than is the Hydrographic Office, whose system is as follows:—As soon as any alterations have been ascertained to be necessary, the office calls in from the London Agent all charts of the locality affected thereby: on rare occasions the alterations are sufficiently delineated by pen and ink, and within a few days the Chart Agent is supplied with the corrected charts; meanwhile the copper plate is corrected for a new issue as speedily as possible. The disadvantage of the Admiralty system is that for a few days—sometimes for a week or more, while the corrections are being made—no chart of a given locality is to be procured. With the officials in some

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public departments there is a strong disposition to condemn all charts excepting those bearing the imprimatur of the Hydrographic Office. We have before shown that it is to the interest of the private chart publisher to keep his charts corrected up to date, and the healthy stimulus of competition acts most effectively in this direction. The private publishers are often in direct communication with foreign Governments, and obtain their information from the same sources as those from which the Admiralty Office is supplied. The value of a chart should rest on its own merit, and there should be no preference except for that which is correct. Private charts in respect to accuracy are quite on a par with those issued by the Admiralty.

Having shown what the Hydrographic Office of the Admiralty and the private chart publishers do towards keeping their charts and sailing directions correct to date, and to what extent they are prepared to furnish corrected charts on any given day, it remains to give our views on a subject of considerable importance to shipmasters—the men who use those implements of navigation. To the various publishing firms it is an £ s. d. affair that strict accuracy in all they issue should be the order of the day. But the shipmaster—not to say the owner—may require to be advised, perhaps hurriedly, on many important points relating to an intended voyage, or in reference to some new port; it may be in reference to some new law, rules, or regulations in connection with international rights and treaties. In our view on these important points we have reason to think the master is sadly handicapped. He is expected to be well informed on such subjects. The few may be, but the many are not; and those who have to seek for the information know not where to find it.

Towards the end proposed we would suggest the *establishment of a central intelligence office*, the business of which should be to assist masters in their endeavours to determine whether they are properly equipped for any given voyage; and to give at any time such information as they may require on any subject appertaining to their vocation.

Such an office would have to be in regular communication with all existing hydrographic establishments and lighthouse boards, so

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as to be furnished not only with "Notices," as soon as they are published for general information, but also have preliminary intimation of all intended changes. On this head, and for early information, no dependence can be placed on consular aid. Consuls give no information until the event has been fulfilled; hence too late. Shipmasters want to know not only what has been lately done, but what is in prospective,—and this as early as the Admiralty or the private publishers. With the best appliances the published reports are never to date.

In our opinion such an office as we have indicated would supply a real want in connection with shipping; allied to it, and as part of a great intelligence department, should be a library of reference where, at any time, and for a trifling fee, those interested in shipping matters should be enabled to obtain the past and present history of all charts and books appertaining to their needs, and get any information of any kind soever, relating to navigation, trade and commerce. We have before now spoken of the necessity for a mercantile marine college; were such established, the intelligence office might well be affiliated on the college. At any rate, if both cannot be had, we ought to have one of them, for it is little less than a scandal that owners and shipmasters have to pick up all information and knowledge relating to their business on a haphazard, uncertain, and often unreliable system.

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## SOME REMINISCENCES OF CHOLERA ON BOARD SHIP.

IN the *Nautical Magazine* for August there is a long article on the best means for preventing an outbreak of cholera on shipboard, and its treatment if it should unfortunately appear. The forecastles of ordinary merchant ships seldom come up to the standard, or possess the facilities for the treatment of sick men suffering from a dangerous epidemic; nor are the sanitary arrangements often present, which the writer of the article in question rightly deems of so much importance. From my experience of this dreadful disease, medicine is of little service in dealing with cases of the pure

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Asiatic type. Brandy, opium, and astringents are alike rejected, and the patient sinks rapidly; in fact, wastes in a few hours from a strong man to a shadow of his former self.

At a time when sanitation was in its infancy, I was in Calcutta, on an Indiaman, during the months of June and July. The temperature, from the lateness of the rains and long-continued calms, rose far beyond the average. It was not uncommon, under the poop, to see the thermometer register 102° Fahrenheit, which, joined to the moisture in the air, induced the most trying weather the *oldest inhabitant* remembered. Cholera broke out with unusual violence (it was stated that 5,000 died in one week); be that as it may, the Ganges was soon covered with the decomposing corpses of men, women and children. These would go down stream with the ebb and return with the flood. Occasionally a particular body might be recognised as it floated by or fouled the cables. One of the first duties in the morning was to clear away these ghastly remnants of humanity from the moorings. The scavenger crows and bramley kites had a perpetual feast. They became so tame that, as they floated by on a corpse, no amount of shouting disturbed them. At night the howling of jackals on the banks of the river indicated that they, too, were helping to scavenger the foul bights into which the bodies drifted in unusual numbers. During the hours of daylight, a few "dingeys," manned by men of a low caste, patrolled the river, with the object of sinking the dead, but as there was no one to supervise they did little good. They were armed with wooden lances, fitted with a cone-head which was driven into the corpse to hold it alongside until an assistant passed the loop of a slung stone over the legs to the centre of the abdomen. When all was ready, the lance was removed with a sudden jerk, and the body disappeared. It was curious to note the manner in which the outer dark cuticle peeled off, exposing the dead white of the under skin. As the disintegration was gradual, subjects were to be seen in all varieties of colour—white, black, and piebald. Not unfrequently, the limbs were missing, probably bitten off by a shark or an alligator before decay had commenced. If the river had its share of the dead, the shore was not without theirs. All night through the funeral pyres were burning, and as

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the naked figures of the Indians moved and worked around the fires, it required no great stretch of the imagination to believe they were a band who had broken loose from another world to ply their vocation in this. The rich were burned, the poor brought down to the river, a hot coal thrust in their mouths, a plunge, and their funeral was completed.

During this period we were drinking the river water drawn from alongside or pumped in at low tide. I think it possible there may have been floating tanks, but if there the seamen of the day seldom had the privilege of drinking from them. Great improvements have taken place in the general treatment of seamen within the last few years, and it is not unreasonable to hope that more will follow. When articles were to be signed a crowd of stalwart men and their wives struggled and scrambled for admittance on board in the hope that a master or a mate would pick out a husband or a son for the magnificent wage of 35s. per month and "small stores." Small enough, God knows, in many a ship where their issue did not leave a morsel of sugar to sweeten the dole of rice which, during three days in the week formed, with salt horse, the dinner meal. The food of the merchant service is still relatively bad, but on comparing it with what it was half a century since, the seaman is a gainer.

Well, after a time, the cholera broke out in our ship. The first victim was the old sailmaker. It was not a particularly violent attack, but the hardships of a sea life which had extended over more than half a century, had lowered the vitality of a constitution not originally strong. He sent for me when he lay a-dying, and I knelt over him and made his humble will. He left me an ebony rubber which I retained for many years afterwards, but at this distance of time I am unable to say what ultimately became of it. He was buried on shore, his small kit sold at the capstan head, and a brief line in the ship's articles formed his only epitaph. The next case startled all hands. A leading man named Martin was using the buckets to wash decks as others passed them from the pump to him. He turned suddenly pale and said, "Lads, I must give in." This was at nine o'clock in the morning. In an hour from this he was writhing on the

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deck with his frame so wasted that he could scarcely be recognized. One of the most skilful doctors of the city attended him, but at half-past eleven the dead boat came alongside, and Martin's career was ended. His effects were sold the same night, and I remarked that one of the purchasers, who was eagerly bidding for them, was borne dead from the ship on the following evening. A remarkable incident occurred at the auction of his effects. When the principal articles had been disposed of, an omnium gatherum of scraps was put up, and were about to be knocked down, when the chief officer called out, "Wait a bit till I examine this canvas belt." On cutting it open 27 sovereigns rolled out on the deck. The owner was a native of Sweden, and with the careful habits of his nation had probably saved this sum from the earnings of a previous voyage. The whole was paid into the Sailors' Home, and the incident duly advertized in the Calcutta papers for the benefit of his heirs. After this such a panic seized the crew that it was not deemed advisable to hold any more capstan sales, lest it should add to the existing depression. There was now a slight lull, and we hoped that a change for the better had set in. It was short-lived. A favourite of mine, named Shearman, was seized with violent cramps, vomiting, and diarrhœa. By the doctor's orders they laid him on the deck and rubbed his cramped limbs downwards to the heels. This appeared to give momentary relief, and he would exclaim: "Oh! thanks, thanks, that is so good," then with a scream, "Oh! oh! it is back again, rub higher, higher." The doctor said: "It is no use, nothing can save him." As exhaustion set in he became calmer, and whispered to me in what manner his clothes and trifles were to be disposed of. A singular phenomenon occurred after death which startled me not a little. He was lying in his coffin under the topgallant forecastle, and I went in to look on him before the lid was screwed down. In the uncertain light (it is doubtful if there was any beyond what straggled through the door and the hawse-pipe) I saw a mass of white over the lips, about the size of a husked cocoanut. For the moment it occurred to me that one of his messmates had put a handful of cotton over the blackened lips; but, on looking closer, I saw that foam was issuing freely from the mouth. "Going to

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bury him alive," I thought and said; then running for the doctor, I reported the circumstance. He smiled sadly, and said: "It is only the exhausting of the lungs of air after death. In a short time it will be over; but keep the coffin lid off until it has stopped." At last the captain was seized. He was, for his position, a very young man—not more than twenty-five years of age. One of the best sailors I ever met, and endowed with uncommon strength of nerve. He bore up manfully, but in a few hours the violence of the attack seemed to render recovery hopeless. The doctor, as he watched him, said: "I never saw anyone die so easily." However, a heavy tornado burst over the city, and the refreshing coolness of the air effected what the doctor's skill could not, and he ultimately recovered. It is no use to make a repetition of these horrors. Suffice it is to say, that every soul on board except myself were seized one after another, and the majority died. The last was the steward. From the first outbreak he used to go moaning about the decks, exclaiming, "Oh, I shall never see dear old 'Ackney again." He lived throughout that terrible time without a finger ache, but persistently insisted that he would never see "'Ackney" His predictions were realised. On reaching the Sandheads, homeward bound, the morning coffee was not forthcoming; and, a search being instituted, his body was found lying between two chests in the steerage. I believe he died more from fright than cholera.

From my own terrible experience I have no hesitation in asserting that cholera is not contagious. Time after time during two weary months I knelt over men dying from it, made their wills, or whispered such words of hope in their ears as I thought befitted the occasion, and never dreamed I was incurring risk by so doing. But on the other hand in my opinion bad water, sour fruit, and poisonous liquor will induce it in the strongest. In our case all these elements bore their share, but I may without hesitation assert that the first-named was indirectly the cause of the dreadful fatality which scourged the *S*——. I learned afterwards that the ship was moored immediately abreast of a sewer which at slack tide shot its stream of liquid poison right up to the ship. All tropical disease is aggravated in intensity by damp heat, thus what in the

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temperate zone only occasions temporary inconvenience often in the tropics proves fatal. No description can accurately pourtray the horrors of cholera on shipboard. Unlike the yellow fever and diseases akin to it delirium does not intervene, the brain is spared to the last. Yet is it remarkable that when convalescent the greatest care is necessary to prevent brain fever supervening. An attack is often fatal, and in one case several succumbed to it, after having successfully rallied from the depressing effects of the exhausting disease which preceded it. W.

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## THE GEOGRAPHY OF CHINA.

A SPECIAL correspondent of the *Times* gives the following interesting description of the chief physical features of the Chinese Empire, a description which may possibly be serviceable to some of our readers and may help to correct some erroneous notions which are extant respecting the geography of this great country :—

"The present empire of China extends over 61° of longitude and 84° of latitude. The total area is some four and a-half million square miles, of which the 18 provinces of China proper, including the islands of Hainan and Formosa, constitute about one-third. The empire includes, besides the 18 provinces, Manchuria, Mongolia, Kuldja, Kashgar, Koko-nor, Tibet, and Corea. Annam, which acknowledged and claimed its suzerainty the other day, can no longer count China as master. Not very long ago, before the Treaty of Nerchinsk, the country as far north as the mouth of the Amur, including the maritime provinces Amur and the Trans-Baikal, belonged to China.

"But the region which interests us in our present examination is comprised by the 18 provinces of China proper. These are Shensi, Shansi, Pe-chihli, and Shing-king on the north; Yunnan, Kwang-si, and Kwang-tung on the south; Kansuh and Ssuchnan on the west; Shantung, Kiangsu, Chekiang, and Fuken on the east; and Honan, Nganhwui, Hupeh, Kweichau, Hunan, and Kiangsi in the centre.

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China proper, speaking roughly, is bounded on the east by the Yellow and China Seas, reaching from Corea to the Tonquin Gulf; on the west by Tibet and Koko-nor; on the south by Tonquin, now incorporated in French Annam, and the Shan States; and on the north by Mongolia. The principal islands out of the thousands which fringe the coast are Formosa or Taiwan, Chusan, Hainan, and the British possession Hong Kong. The enormous tracts lying outside China proper, still almost *terræ incognitæ*, are for England beyond the radius of profitable trade intercourse, and, therefore, outside our present discussion. Tibet, when opened up, still a most remote contingency if it is to depend upon any action of ours, must be approached through India, or, if we show ourselves supine, by the Russians crossing the Kirgkish Highlands. The hill districts of Koko-nor, the Gobi desert, Mongolia, and Manchuria, are all unsuited for advantageous trade relations. These table and highlands are in great part hill and desert, poor and sparsely peopled; where fertile and moderately inhabited they are too distant.

"The area of China proper measures 1,848,870 square miles, being about half the size of Europe, seven times that of France, and 15 times that of Great Britain. Each of the 18 provinces, therefore, is on an average almost as large as our own country. Though not so densely peopled as at one time supposed—mistaken estimates having been circulated by travellers who had not penetrated the country away from sea board or river—it is yet thickly populated.

"Victor Cousin has said 'Tell me the geography of a country and I will tell you its future.' For either theoretical or practical purposes a knowledge of the topography of a country is a necessity. Its practical value is at once apparent whenever an attempt is made at laying down a system of communications, either by road or rail. Maps of China are to this day to be found on which are projected systems of railways carried across quite impracticable ground, in ludicrous defiance of mountain systems and other obstacles. The physical characteristics are as yet but imperfectly understood both in Europe and China, though the narratives of the travellers named, the studies of Richthofen, and the recent work of Elisée Reclus

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have done much to make the European geographer acquainted with the subject. In China proper, after dismissing the more or less savage tracts forming a fringe to the west and north, there still remains a vast empire of most varied character. The main features of the country include high table-lands, broken mountainous country, rivers breaking through stupendous ranges, and the deltas of the Yellow, the Peiho, the Yangtse, and the Sikiang (or Canton) rivers. Looking at the map it will be seen that the whole country, with the exception of the deltas, is divided into a number of compartments, each of these being surrounded by impounding hills. The gorges, by means of which the drainage is carried through these inclosing ranges, form a marked and imposing feature in the character of the hill country. Not only are the rivers, whose trend is east to west, separated from each other by mountain ranges, but the interior is shut off from the sea, as regards trade purposes, by what may be termed a palisade of hills, running close to the sea board, from north to south.

"A few words are necessary regarding the mountain system of Western China. The ranges that permeate the region south of latitude 45° N. may be said to have their nucleus in the Pamir plateau, the 'Roof of the World.' From this extend the Tian-Shan, or Celestial Mountains, separating Mongolia from Chinese Turkestan and the Gobi desert. To the south of the Tian-Shan the Kuen-lun range takes its exit, and proceeding due east separates Chinese Turkestan, the desert of Gobi, and Koko-nor from Tibet, ultimately striking the Yung-ling mountains near 104° E. At the south-east corner of the Pamir a huge range leaves the plateau, and joining the Kuen-lun with a cross spur, forms the western border of the Central Tibetan table-land. Thence, making a great curve, it continues as a barrier round the southern and eastern sides of the high plateau, until it joins the Kuen-lun about 95° E. Under the name of the Himalaya it separate that portion of Tibet drained by the Sanpo from India, some of its peaks being 30,000 ft. in height. East of Assam it is broken through by the Bramaputra or Sanpo. Continuing eastwards, it throws out a huge arm southwards, which forms, with its plateaux and mountain ranges, the primary base of Indo-China. This arm is cleft length-wise by the

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Salween and Mékong rivers, and partly in its length and in part transversely by the Yangtse and its branches. The Irrawaddy rises in its western arm-pit; the Sikiang (Canton River) and the Songkoi (Red River) in its eastern one. The main range then continues in a north-north-east direction, and under the name of the Yun-ling, impinges on the Bayan Kara, which springs in 95° east, 45° north, from the eastern flank of the hill barrier that encloses the central Tibetan table-land. Running nearly due east, and known on European maps (but only there, as Richthofen has shown, for 'ling' is applied only to a mountain pass) as the Pe-ling and Tsing-ling ranges, it forms the water parting between the Yangtse and Yellow River systems. The mountainous belt of the south-eastern provinces forms the northern water-shed of the Canton River, and then divides between it and the Yangtse system. All the ranges which permeate China proper, with the exception of the mountains of Shantung, jutting out south of the gulf of Pe-chihli, are connected with the western Tibetan system. The average heights of the Western China Highlands may be roughly given as follows:—The Pamir plateau, 15,000 ft.; Tibet, 15,000 ft.; Koko-nor, 10,500 ft.; the Mongolian plain, 4,000 ft.; the Shansi table-land, 3,000 ft. to 6,000 ft.; Yunnan, 5,000 ft. to 7,000 ft.

"Regarding the rivers of Western China draining southwards, such as the Sanpo, the Salween, and the Mékong or Cambodia, there is nothing to say now. They are all mighty in dimensions, but quite unnavigable, and therefore do not come within the present discussion. Of the Chinese rivers the Yangtse is indisputably the most important, being the main artery, indeed the only real channel for trade from Eastern to Western China. It has a total navigable length of 1,700 miles, of which the 600 between Shanghai and Hankow are now traversed by large sea-going and river steamers, while Ichang, some 360 miles beyond, is reached by light-draught steamers. The Hoangho, the river of Northern China, which has so often, and with such terrible results, shifted its mouth, may be said to be nearly unnavigable. The amount of silt brought down by it is encroaching on the sea at the rate of 100 feet annually. The basin of the Peiho is formed by a number of streams, flowing mostly in independent channels to within a short distance of



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the coast, when they converge towards the treaty port of Tientsin. For purposes of navigation it is only practicable for light-draught boats. Recent surveys have enabled us to estimate the value of the Sikigan (Canton) River, which traverses the whole provinces of Kwang-si and Kwang-tung and part of Yunnan. Briefly the river could be ascended some 350 miles by light-draught steamers, more than half the distance from Canton to the navigation limit. On the upper portion junks can ascend 300 miles to the borders of Yunnan. The importance of this river to China need not be dilated on, nor the advisability of their opening it effectively. The Pekiang, or North river, enters the Sikiang west of Canton, coming from the north, as its name implies. As far as Shan-chan, some 150 miles, it could be navigated by light-draught steamers."

## THE COMMERCIAL CODE OF RUSSIA.

(*Continued.*)

### CHAPTER V.

*On the Hire of Seamen and Sailors.*

### SECTION III.

*On the Legalization of a Contract.*

944. To render a contract for the hire of seamen and sailors legally effective, it is necessary:—(1) (That there should be) Duplicate signed, written, or printed sheets containing the points mentioned in Art. 938, one of which is retained by the master and the other by whomsoever the sailor entrusts it to; (2) A receipt of earnest-money and of the hands on board the ship; (3) A registration [exhibition] of the contract at a broker's.

945. The master must always have the contract for the hire of the seamen and sailors with him, and show it on the demand of the latter. If he commence a voyage without having this contract with him, he is liable to the money fine defined by Art. 1234 of the Penal Code (1866 ed.), and of which one-half goes to the local Committee of Public Charity, and the other to the informer. (See note to Art. 162.*)

* Art. 162 only states that in places where provincial institutions are established, the Committees of Public Charity are dissolved.

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946. The master is bound to give earnest-money to each sailor on his signing the contract. Those contracting by the month may claim as earnest one month's pay ; and to those contracting for the whole voyage is given in earnest one-fourth part of the whole pay to be received.

947. A contract for the hire of seamen becomes legally binding from the moment of its signature by the master and seamen or sailors. On the signature of this contract the seamen are bound to go on board the ship and enter upon the discharge of their duties immediately.

948. Should a seaman or sailor, after signing the contract and receiving earnest-money, not appear on board the ship for which he was hired in the course of three days, or should he make a fresh contract with another master, the master to whom he first hired himself may cause him to be arrested by the police.

949. A master who knowingly takes on board his ship a seaman or sailor (engaged to) another master, without a written license or discharge from this latter, is sentenced to a fine in accordance with Art. 1232 of the Penal Code (1866 edition), and to indemnify the former master of that seaman or sailor for loss sustained (by him).

950. If the ship is not ready for sea, and a seaman or sailor has a valid excuse for remaining and not going on the voyage for which he engaged, he, having notified this to the master, and returned the earnest money, may claim his discharge, and, in case of its being withheld by the master, may have recourse to the local police authorities. But when the vessel is already ready for sea he must go in it, notwithstanding any excuse* for remaining.

951. If a seaman or sailor sign a contract and engage to go on a voyage on a ship which is already ready for sea, and meanwhile his creditors appear and claim judgment against him ; in such case he cannot be taken from the ship, but the master must give the creditors a bond or acknowledgment that in payment of the debt there shall be from time to time money deducted from the pay of the sailor ; the money given in earnest is retained by the sailor.

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* The word here rendered "excuse" is literally "necessity;" but the use of that word imports an absolute contradiction of terms.



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952. If after signing a contract the master cannot, on account of sickness, death, or other cause, go on the voyage, in such case, should the loading of the ship not have commenced, the crew may withdraw from the contract; but if the loading of the ship have commenced the contract remains in force and the mate performs it, if another master is not appointed to the vacant post, at the pleasure of the owner of the ship.

953. If, after a contract has been signed by sailors, the owner of the cargo, with the consent of the owner of the ship, changes the voyage, the sailors are bound to go on and fulfil the contract on the same conditions; but if the voyage be thus lengthened, they have a right to demand a corresponding increase in pay.

The strict sense of Arts. 953 and 957 of the Commercial Code, and also of others laid down in this Code concerning the rights and liabilities of seamen and sailors (Arts. 954, 955, 957, and 998) leaves no doubt that, in defined as well as undefined voyages, these seamen and sailors have no right to leave the ship without cause (*i.e.*, to terminate their engagement) until the completion of the voyage and getting their discharge, although the voyage may be prolonged beyond the period for which they were hired. (Decisions of the Civil section of the Cassation Department, 1868, No. 844, Barsa and others.)

954. If a merchant vessel undertakes an undefined voyage, which is especially usual with general ships,* the master must make a bargain with the seamen and sailors for hire and payment by the month, and inscribe it in the contract.

Note.—The term "undefined voyage," is understood to mean one where a ship on delivery of a cargo in one port takes a cargo for delivery at another, and so forth.

## SECTION IV.

### *On the Performance of the Contract.*

#### I.—*On the Duties of Seamen and Sailors to the Master.*

955. The obligations of seamen and sailors towards the master consist:—(1), in that they should, from the time of their appointment until their discharge, and during the whole course of the voyage, remain on the ship and not go away from it, either by day or by night, and not absent themselves on any occasion without the

* Lit. in the carrying trade.

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knowledge and permission of the master; (2) that they should obey him in all things relating to duty and work; (3) that they should know their business and fulfil in detail all orders of the master in everything touching their duty and conduct.

956. A seaman or sailor absenting himself from the ship, without the knowledge and permission of the master or mate for a day or night, is liable for this to damages and fine on the basis of the rules laid down in Art. 1270 of the Penal Code (1866 ed.).

957. If a seaman or sailor voluntarily goes away from a ship, or refuses to go to sea in her; at the end of three days after the desertion or refusal, he loses all pay coming to him, and all of his personal effects remaining on board the ship, both of which accrue to the profit of the owner of the ship. When this happens during a voyage, and the master is obliged to hire another hand in place of the one who deserted, the absconding party is bound to refund to the master all that he pays beyond the sum contracted for with him, to the person hired instead of him. In addition to that, in case of an insubordinate and unreasonable refusal to serve, a seaman or sailor may, on the demand of the master, be subjected to punishment on the basis of Art. 1271 of the Penal Code (1866 ed.).

958. Seamen and sailors are obliged, by virtue of the contract signed by them during the whole continuance of its operation, to obey and show to the master, mate, and boatswain, afloat or ashore, obedience in everything touching their duties on board the ship, or ship's boats and skiffs with respect to keeping them intact and preserving them, and also the goods or cargo; seamen should be sober, diligent, active, and careful.

959. The special business of seamen is the safe preservation of the ship and the goods or cargo loaded on it from all damage and detriment [loss] (see below Art. 987), and therefore in case of danger each seaman is bound to use every possible endeavour for the safety of the ship, goods, or cargo; if notwithstanding all efforts it is impossible to save the ship, goods, or cargo, and they are lost, burnt, or otherwise destroyed, they are bound to use every possible endeavour for the safety of the wreck [lit. *débris* Fr.].

960. A seaman or sailor must, at the order of the officers,

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diligently pump the water out of the ship, subjecting himself otherwise to a deduction from the pay due to him for indemnification of the damage, detriment, or loss which may be occasioned to the ship, goods, or cargo.

961. If a ship or goods be burnt or damaged through the carelessness of the master or seamen, the Insurance Society is not bound to pay for such loss, unless in its insurance agreement with the owner there was inserted a special condition to that effect.

Note.—The rules concerning the use of fire and tobacco smoking on board ship, as well as the fines inflicted for the breach of these rules, are defined in the Fire Regulations.

962. (Supt. of 1876). A seaman or sailor, for playing cards or dice on board ship, is liable to a fine on the basis of Art. 1274 of the Penal Code.

963. If a seaman or sailor be maimed in consequence of drunkenness or fighting, or renders himself, through debauchery, incapable of performing his duties on the ship, he is deprived of his pay, which goes to the master in order that another man may be hired in his place. Should this happen in a foreign place, the master must return it to him again.

(The final clause of this Article appears to be based on the presumption that out of Russia no one can be got to serve in a Russian ship, and that the master is not to take advantage of that circumstance by pocketing the pay even of a debauchee.)

964. Seamen and sailors must take their turn of watch or guard according to the arrangements of the master.

965. A seaman or sailor being absent from his turn of watch, or during its continuation having fallen asleep, or shown signs of drunkenness, is liable to fine and responsibility on the basis of Art. 1266 of the Penal Code (1866 ed.).

966. If thieves are found on board the ship, and the seamen or sailors or watch designedly do not give the alarm and call the other seamen, they are liable to punishment on the basis of the regulations laid down in Art. 1267 of the Penal Code (1866 ed.).

967. A seaman or sailor who, during an attack of the enemy, pirates, or thieves, on the ship, designedly keeps aloof from the defence of the ship, goods, or cargo, and permits them to be seized, pillaged, or damaged, is subject to punishment on the basis of the

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rules laid down in Art. 1267 of the Penal Code (1866 ed.). On the other hand, for bravery shown on such occasion he receives the right to demand from the owner of the ship or Insurance Society a suitable reward according to the Military Marine (Naval) Regulations. Seamen or sailors who, in time of danger from fire or shipwreck, keep aloof from the execution of orders necessary for the safety of the ship, are liable to punishment on the basis of the rules laid down in Art. 1268 of the Penal Code (1866 ed.).

968. If a seaman or sailor, during the loading or unloading of goods on board a boat or pram [lighter] for transport into a dock-yard or harbour, receives from the master an order to go on board the boat or lighter, to stay with the goods and take charge of them, he must carry out the master's orders with all possible faithfulness; for that service he will receive in addition to the stipulated pay, thirty silver copecks for each journey [lit. sending]; but he is responsible and must pay for all damage, detriment, or losses.

969. Seamen or sailors who, whilst the contract signed by them is in force, show slowness or inefficiency in carrying out the orders of the master, mate, or boatswain, in matters relating to their duties on board the vessels in keeping intact and preserving them and the goods or cargo, and also in what relates to the expediting of the voyage, are liable for each such breach of duty, to a fine on the basis of Art. 1260 of the Penal Code (1866 ed.). But the master cannot have this fine inflicted unless he proves the disobedience, slowness, or inefficient performance of his orders to the Court by the sworn testimony of two of the seamen.

970. For all damage, detriment, and losses, caused to the ship, tackle, or cargo, wilfully and maliciously, and also for every act of violence, conspiracy, threat, or mutiny, and for keeping aloof from saving the ship or cargo, the accused is brought before a Criminal Court.

971. A seaman who has committed murder, mutilation, grievous bodily harm, theft, or other capital crime, is kept under guard and tried according to law. If the master intentionally fails to take the necessary measures for preventing the flight of a person who has committed a crime, he is liable to punishment for this on the basis of the rules laid down in Art. 1236 of the Penal Code (1866 ed.).

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972. If a seaman during the term of the contract for which he has signed designedly murders, mutilates, wounds, or assaults the master or mate, or commits arson, breaks up the ship, or designedly runs the ship on a sand bank, or on a rock, or pierces or scuttles the ship's bottom, or in any other manner designedly destroys the ship; as also, if he commits robbery with violence, or steals by day or by night; or if, without permission, and in opposition to the orders of the master, he takes away the ship's cutters, gigs, or dingheys; or designedly causes other damage to the ship, goods, or cargo, or conspires against the master or mate, or takes up arms, strikes, or threatens any of them with violence, and is convicted of it: this is reckoned petty treason, and the culprit is brought to justice [or before the court], and in addition to payment for damage and loss, is subject to punishment proportionate to the crime.

973. If a seaman cause a mutiny against the master, or forces the master against his will to change the course, or to go to a coast or harbour other than that he had intended, the master brings him before the court as a mutineer to be dealt with according to law.

974. In case of dissatisfaction with the provisions issued as insufficient in quantity, or of bad or unwholesome quality, the crew must represent it to the master, and if he does not give them satisfaction, they must not refuse to obey, but continue to discharge their duties until their arrival at the place of destination, and there enter a complaint before the Russian Consul, in foreign ports, and in Russian towns and ports before the local police authorities, who, after inquiry, will decide the matter according to the laws of mercantile navigation; and if it appears that provisions were actually not served out according to the regulation quantity, or were issued of bad quality, the master will make reparation to them by giving the difference in money.

### II.—*On the Rights and Duties of the Master with regard to the Seamen.*

975. A master is bound to conduct himself with clemency and kindness towards the seamen, showing them an example by propriety, good conduct, industry, and meritorious performance of his

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functions, and thereby acquire the respect and willing obedience of all his subordinates.

976. A master, before commencing a voyage, is bound to furnish the ship with a complete and sufficient quantity of good and wholesome provisions, such as are used for seamen afloat or on the high sea, allowing for the case of detention on the voyage, so as not to be compelled to go into any other port to purchase them, and thereby increase the expenses; and taking care that these provisions are properly packed, and are not spoiled during the voyage.

977. The master must serve out a sufficiency of provisions to the seamen each day; and they, on their part, have no right to demand from the master for each man per day more than is laid down in the list appended to this [Art.] as the daily allowance of a sailor on board a Russian war ship.

(For Appendix, see end of Code.)

978. If the master cannot give any particular sort of provisions in accordance with the regulations for war vessels, he may, with the consent of the seamen, substitute another sort for it.

979. The master is prohibited from diminishing the allowance of provisions except in cases of extreme necessity.

980. If by reason of foul winds and such like unforeseen circumstances, the master is obliged to reduce the allowance, he cannot do so without the consent of the mate, boatswain, carpenter, and oldest or best sailor, and on arriving in port he must pay the seamen for the short allowance.

981. If the master, on arrival at his destination where the ship is to be loaded or discharged, can obtain fresh provisions at a moderate price, for the preservation of the men's health it is desirable to serve out fresh meat, pot herbs and vegetables at least three or four days in the week; but they cannot demand this from the master, especially in case fresh provisions are expensive in that place.

982. On the arrival of the ship at the place of destination and correct delivery of the goods, the master has to give to seamen who were zealous, obedient, and punctual in their duties and behaviour, the pay due to them up to that time. If any of them has shown himself to be careless, or was disobedient or incorrect in his duties,

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or of bad and unscrupulous conduct, or has given cause for suspicion that he intends to run away or desert the ship, then the master may keep one month of the seaman's pay in hand.

983. A master is not justified in personally inflicting corporal punishment on a seaman, excepting for slackness in carrying out orders in time of danger to the vessel, masts, sails, or tackle; in such case he may give not more than five strokes with the rope's end or whip [rod].

984. If a seaman during a voyage cause insurrection or mutiny, the master having taken council with the mate, boatswain, carpenter, and oldest or best sailor, may, in extreme necessity and with their consent, sentence the culprit to not more than twelve blows on the back with the rope's end; otherwise he must defer punishment, and on arrival at the place of destination bring the case before the local police authorities, in a Russian port—before the Russian Consul, in a foreign one—who, having minutely investigated the circumstances of the affair, defines the punishment. If the master meet with a Russian war ship or frigate on the voyage, he may bring a complaint before the commander of it.

## SECTION V.

### *On the Discharge of Seamen and their Accounts.*

985. Until the ship has arrived in port, and has been moored and unloaded and again ballasted, a seaman cannot claim his discharge, notwithstanding the term of his contract has terminated. But when all this has been done, the master must give each of them a discharge, with a certificate of their conduct during the time of the contract, together with the pay due to them up to the day of discharge or liberation. If the discharge or pay due is withheld, the seamen and sailors may bring a plaint, in Russia before the local police authorities, and in foreign towns, before the Russian Consul.

986. The master pays the seamen and sailors out of the money received for the hire of the ship or transport of goods (*i.e.*, out of freight).

987. When the ship, or goods loaded on board it, is lost, burnt,

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or otherwise destroyed before settling accounts with the sailors, their pay is also lost.

988. In every other case (Art. 987), even if the ship be condemned, a seaman or sailor cannot be deprived of his pay except on account of his misconduct.

989. When a seaman shows himself to be unfit for the duty, which according to the contract he bound himself to perform, the master may withhold his pay until his arrival at a port or town, and, having made a deposition of the fact before the Court, prove his incapacity by witnesses; but, during the voyage, the person proved to be unfit is bound to perform his duties as well as he can for food alone, or for such pay as the master may allow him.

990. A seaman, who in the discharge of his duty is maimed, wounded, or injured, has a right to demand from the master not merely charity and assistance, but also all expenses which his medical treatment may occasion; and if he is not in fit condition to continue the voyage in the ship, the master is bound to pay for his conveyance to the place from which he shipped, charging the expenses to the owner of the vessel.

991. A seaman who falls ill and is left behind by the master in any port on account of his inability [lit. impossibility] to continue the voyage, receives pay up to the day of the termination of the contract.

992. (Supt. of 1867.)—The master is bound to give to a seaman who, in the discharge of his duty, is deprived of a limb double the stipulated pay on account of the owner, and if the sailor who has received such injury in the execution of his duty, die, his heirs may claim the double pay due to him; and if there are no heirs present, these moneys, together with the effects of the deceased, are sent to the proper quarter for distribution amongst the heirs.

993. The master is bound to pay directly, or send through the Committee of Public Charity, to the heirs of a sailor who dies whilst on board the ship, from an illness, the wages due to the sailor and all articles which were his personal property. *See* note to Art. 162 [*ante*]. (*See* note to Art. 945.)

994. In the case of the sale of a ship in a foreign country, the

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master is bound to send back all the hands shipped in Russia, at the expense of the shipowner and with full wages, to the port or town where they were engaged. If, in such case, they wish to take their discharge, and, in the presence of the Russian Consul, if there be one, or envoy, or ambassador, agree to go on board another ship, and return in it to a Russian port, the master and owner of the ship sold are relieved from the obligation above stated.

Seamen and sailors not having received satisfaction in wages in the case of the sale of a ship in a foreign country, recover satisfaction, not from the master, but from the owner of the ship. (Dec. civ., sect. Cass. Dept., 1869, No. 867, Nikunen.)

995. In all other cases (Art. 994) the master is prohibited from discharging from his service on board the ship in a foreign country a Russian subject [who is] a seaman, except for urgent and necessary causes, and then only with the written permission of the Russian Consul, resident, envoy, or ambassador, setting out the urgent and necessary causes and also the discharge. On return to Russia, the master is bound at his peril and responsibility to produce this written permission in the custom house, for presentation in the proper quarter.

996. The master is responsible for people who have left during the voyage, and also for those shipped on again, and he must report on oath the circumstances under which the diminution or increase in number occurred.

997. On the discharge of Russian sailors from Russian vessels in foreign ports, both the master and mate take care,—

(1.) That the discharge was only in cases when those people could not return to Russia in the ship, on account of illness, sale of the ship, or other legal cause, that they had received in full the money coming to them, were furnished with the necessary certificates, and placed under the charge of the Russian Consul.

(2.) That the Consul satisfied himself that these people had received their wages and travelling expenses, reckoning up to the time of their arrival in Russia, taking into consideration the distance of the foreign port where the ship was sold from the Russian one from which they sailed; or, that he demanded from the owner, his agent, or the master, the necessary indemnification for the sailors.

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(3.) That the Consul gave the owner of the vessel, or the master, an acknowledgment of the reception of these people, with their names, under his charge, indicating the names of the ship, master, and owner, the place whence the ship came and where it was intended to leave it, and to whom it was sold; also with evidence of the personal means of these people, or the amount of money given to the Consul for their maintenance and travelling expenses, with a certificate that they had been paid up, and of how much was justly deducted, and that they had received the necessary certificates.

(4.) That the Consul on the issue of said quittance did not require the sailors and master to go to the Russian port whence they had formerly sailed, permitting them to go to any other at their wish and convenience.

(5.) That the Consul in his reports to the Department of Exterior Trade notified the fulfilment of all the foregoing. *See* note to Art. 768 [*ante*].

998. If Russian sailors in a foreign port leave the ship through caprice, or are disobedient, or insubordinate; Consuls, on the declaration of masters and on hearing the case, are bound to assist in getting them back to the ship and reducing them to obedience. But if the sailors do not comply with the demand of the Consul, they are deprived of the right to be sent home at the expense of the shipowner, and the Consul sends them back to Russia as occasion offers, on Russian war ships or merchant vessels with the co-operation of the local authorities, notifying their departure to the Department of Exterior Trade. *See* note to Art. 768 [*ante*].

999 (Supt. of 1876).—If the owner of a vessel, or the master of it, secretly and intentionally leave members of the crew in foreign parts, Consuls must send them to Russia at the expense of the owner of the vessel, from whom is demanded the payment of a fine not exceeding twice the sum of the money expended in sending home those who were left, and they may proceed against him according to law.

Note (ed. of 1857).—It is self-evident that the rules for sending people of the crew to Russia, cannot be applied to foreign sailors.

(*To be continued.*)

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# CORRESPONDENCE.

## MORE REMARKS UPON OCEAN NAVIGATION.

*To the Editor of the "Nautical Magazine."*

Sir,—Since the appearance of Mr. Hudson's excellent paper on the above subject in the April issue, I have been anxiously waiting to read in subsequent numbers what other stellar observers had to say on a matter in which I am deeply interested, and to which I have devoted for several years past all my leisure time at sea, and also a goodly portion of my time on shore. Possessing far more dexterity in the handling of a sextant than of a pen, it is with some diffidence that I venture to give some of the results of my experience to those of your readers who have not yet accepted the fact that observations of stars and planets are superior in many respects to those of the sun.

For four years past, whenever practicable, I have worked an A.M., and also a P.M. Sumner, and very frequently a combination of both, and with a mean of the two reduced to noon, have been able to obtain a far more reliable position than any to be got by trusting even to the best sights taken on one side of the meridian only. Many observers have been puzzled by the discrepancy shown between sights taken on either side of noon, and, although aware that refraction was the principal cause, have been unable to decide which set was the more reliable. To these I say,—"Be in doubt no longer." Unless a great atmospherical change has taken place in the interval, the mean of the two sets will counteract the effects of refraction, personal equation, and other sources of error, and give a nearer approach to correctness than by any other method. In low latitudes I have never found any objection to the use of Sumner's method with the sun; but on hundreds of occasions, when the altitudes have been too great for any tables I possess, I invariably found the true bearing by the application of the compass error, which, of course, was found before the altitude became too high.

My sight-books for South African and North Atlantic voyages

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show that at some time or other three out of every five nights are favourable to stellar observations, but *at twilight and at dawn are the only times when the horizon is sufficiently defined even with the aid of the best instruments to observe a correct contact.* You may observe all through the night, under favourable atmospherical conditions, but there will always be a liability to an error of four or five minutes. I am quite aware that for ordinary purposes of navigating on open ocean, sufficiently correct results may be obtained on any fairly clear night; but I wish to impress on those about to commence star work, that it is only at the times I specify that great certainty can be expected.

On the question of personal equation in connection with stars which Mr. Wilson Barker treats of in the most recent issue I regret that I am not in accord with him. When a man's personal equation amounts to 10′ or even 5′ on a dark, hazy night, in my judgment the sextant is best left in the cabin. These ideas appear to me more ingenious and fanciful than really practical. My arguments regarding stellar observations are devoted to the demonstration that a large mail steamer of high speed can be navigated in safety *by stars judiciously selected and carefully observed, as well as by the sun*, and any sort of guesswork observation I consider as irrelevant to the great question at issue. Whether Mr. Barker commands a ship or not I am unaware, but if he does I leave it to his conscience to answer how long or how far he would run his ship on the doubtful results of stellar observations taken with an imperfect horizon. The simplest plan for eliminating errors of personal equation is to observe stars on opposite sides of the heavens, whether for latitude or longitude, and to take the means which will give a result fairly accurate and more worthy of dependence than the application of personal equation no matter how determined, as this species of error is not always the same, but varies with the health and temperament of the observer. It will appear as an obstacle to the beginner, if he adopts Mr. Barker's theory, that before he can take a trustworthy altitude he must spend weeks, perhaps months, in deducing his personal equation from some hundreds of observations. In my opinion, for ordinary purposes, if one is a fair observer the error arising from

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this cause may be safely ignored, but if very correct results are required such as for rating chronometers (which I constantly practise with the artificial horizon on shore) or for determining doubtful positions, my method is to observer simultaneously with my four officers the meridian altitude of some heavenly body and by an interchange of sextants all round (index errors previously known) to deduce my own personal equation. This, with a clear horizon and my health and temperament in a normal state is invariably 1′, and as I do not believe in the possibility of obtaining correct results in hazy weather, and still less on dark nights in a sea-way, I am content to leave all other deductions to those who have more faith in them.

Leaving criticism on one side for a time, I will now describe my methods of dealing with the stars and the instruments I use. After sunset and before daylight disappears on an ordinary clear evening the horizon will present so defined an appearance with such a minimum of refraction that a fair observer with good glasses to his sextant can observe as many altitudes of stars all round as he wishes, and *with a degree of dependence that is not possible with the sun in day-time*. With an officer taking the time by chronometer, and another the bearing with Sir W. Thomson's sight-vane, I can comfortably manage one every minute. If Polaris is visible I observe it at the beginning, in the middle, and at end of round of observations, and the mean of its altitudes satisfactorily settles the latitude. Before commencing work I pair the stars I intend using, selecting east and west ones for time, with each pair of nearly similar altitudes. The mean of each pair will show a pretty correct longitude. Should Polaris be invisible, or no star in transit, or none favourable for ex-meridian observations, I pair the stars for Sumner's method, taking care to have one of each set not less than 2½ points from meridian. I use Thomson's or Inman's Tables, with Johnson's corrections, and get such good results that I am dissatisfied if there is a discrepancy between any two pairs of more than 2′. In the morning, before dawn has merged into daylight, the time is equally favourable.

I also use two other methods of fixing position early in the day, which I have never seen published, but the importance of which is

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my constant endeavour to impress on my brother shipmasters. It often happens that it is of vital consequence, especially in making low land in seas where uncertain currents abound, to get a "fix" as early as possible. For this purpose, before daylight, I note from the Tables how the sun will bear on rising, and then pick out a star whose bearing will give a good angle with the sun when high enough for an altitude. I then use the star and sun combination by Sumner's plan; or, as late as possible before daylight, I observe a star for latitude, so that when the sun rises this only needs correction for the short run in the interval, and as probably the sun will be near the Prime Vertical, the resulting longitude will be fairly correct.

Now for the sextant. I think it is Captain Lecky in "Wrinkles" (the most practical work yet written, and for which he deserves and, I think, enjoys the hearty thanks of all seamen), who says that it is better to have no star-telescope than an inferior one. In this I cordially concur. Against using binoculars, whether fitted or not, I cannot speak too strongly, and I hope Mr. Hudson will not feel offended when I add that the mention of this practice in the April number, in my humble opinion greatly mars what is otherwise a very able and interesting communication. Mr. Barker gives the preference over star-telescopes to a fitted pair of binoculars, as causing no inconvenience, and alludes to the uselessness of the former on dark and hazy nights. Surely one half a pair of binoculars, such as I am about to describe, besides being lighter and much handier for stowing in the case, will cause still less inconvenience than a whole pair, and as no instrument has been yet devised that will produce a trustworthy horizon on a dark, hazy night, I am happy to agree with him on one point, that in such a state of the atmosphere the best star-telescope is useless.

To obtain the best instrument I have consulted many makers of repute in various English, American, and Continental places, with the result that I do not find I can improve on the one I possess. Three years ago, Lilley, of London Street, E.C. (in my estimation the best instrument-maker and compass-adjuster in England), fitted to a new pillar-sextant I reserve almost exclusively for star-work, one of the star-telescopes so favourably mentioned in Mr. Boynes'



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letter in the present issue. It is simply one barrel of a binocular glass fitted with a spur on the rim near the object-glass, to screw into the square hole of the up-and-down piece of the sextant. It does not magnify much, but possesses great illuminating power, and if the horizon is at all visible will secure very correct contact. The one objection is its unhandiness in shipping; and this induced me to have a telescope made after my own idea, which I entrusted to Blount-Thomas, of this town, for execution, who very satisfactorily carried out my views. These consist in having an up-and-down piece, with a sighting sufficiently large to take the telescope, which ships in two parts, thereby lying snugly on the face of, and balancing, the sextant, and being very handy for stowing in case. The sight-ring has a filling-in piece to screw into it, into the centre of which fits the ordinary telescopes for the sun, and I always unscrew both together when about to change to the star-telescope. I have also fitted to this sextant a convex-concave lens a trifle larger than, and adjoining and working on the same pin as, the index glass-shades. In observing, when the star is roughly brought down to the horizon, I put down this lens, which makes the star appear a *distinctly-marked line or thread of light, instead of only a luminous point*, and the facility of getting perfect contact is so simple that this lenticular arrangement has been the admiration and envy of all who have seen it.

I have had the pleasure of showing my sextant and its appendages, with the results of my stellar observations, to a goodly number of astronomers in England and the United States; to naval officers engaged in navigating as well as surveying duties of both these countries; to many ordinary navigators; and to instrument makers in London, Liverpool, New York, Baltimore, and other ports, and have been much gratified by their favourable encomiums and encouragement. It is owing to the oft-expressed desire of some of these that I should give the nautical world a description of what has proved to be an invaluable instrument for observing stars, that I trespass on the pages of your valuable journal, in the hope that my experience may strengthen any of your readers who are faint-hearted about stars, and may, perchance, be the means of converting some to their use who at present imagine

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the operation to be a difficult or a doubtful one. Should my wish be gratified in only one instance, I shall then feel that I have not spent the Bank Holiday in vain in writing this paper.

I am, Sir, yours faithfully,

HENRY OWEN,

Commander Union Steamship Co's s.s. *Arab*.

Southampton, August 5, 1844.

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## STELLAR NAVIGATION.

*To the Editor of the "Nautical Magazine."*

Sir,—In your April number, Mr. Hudson give a method of finding the ship's position, which, while it saves much calculation, is so simple and so little liable to error, that all which could be desired is that he had given a more thorough explanation of it. One has only to look at the sky on a starlit night for its verification, and in imagination draw two lines from any two stars to the zenith, where they will be found to intersect, and which, being referred to the terrestrial sphere, will be the observer's position. I will endeavour to explain it as briefly as I can without taking up too much of your valuable space.

Let it be required to find the ship's position from the simultaneous altitudes of two stars S and S'. True altitude of S 40° S. and E. zenith distance 50°. Declination, 10° S. Right ascension, 23 h. True altitude of S.', 50° S. and W. Declination, 0°. Right ascension, 17 h. 30 m. Zenith distance, 40°. M. T. G., 16 h. Sidereal time, Greenwich Mean noon, 5 h. 25 m.

To the Sidereal Time Greenwich Mean Noon, (N. A., p. II.), add the Greenwich Mean Time, and the Acceleration for the Greenwich mean time (taken from the Table in the "Nautical Almanack" for converting Intervals of mean Solar Time into equivalent Intervals of Sidereal Time), the sum will be the Sidereal Time of Observation at Greenwich. Take the difference between this and the star's Right Ascension and it will give the position of the star East or West of Greenwich, which, turned into arc will be a longitude,



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which together with the declination as latitude will be the star's place on the chart or terrestrial globe at the time of observation. If the Right Ascension of the star is greater than the Sidereal Time Greenwich, the longitude will be East and *vice versâ*.

| | h. | m. |
|---|---|---|
| Sidereal Time G. M. noon ... ... | 5 | 25 |
| M. T. G. ... ... ... ... | 16 | 0 |
| Acceleration on M. T. G. ... ... | | 3 |
| Sidereal T., Greenwich ... ... | 21 | 28 |
| R. A. Star S. ... ... ... ... | 23 | 0 |
| Difference ... ... ... ... | 1 | 32 |
| Longitude ... ... ... ... | 23° | 0′ E. |

| | h. | m. |
|---|---|---|
| Sidereal T., Greenwich ... ... | 21 | 28 |
| R. A. Star S′ ... ... ... ... | 17 | 30 |
| Difference ... ... ... ... | 3 | 58 |
| Longitude ... ... ... ... | 59° | 30′ W. |

Having thus obtained the positions of the two stars, measure the zenith distance of the star S. 50° with a pair of dividers, and place one leg on the star's position, and with the other draw a small arc to the N.W$^{d}$., and proceeding in the same manner with the star S′ draw a small arc to the N.E$^{d}$., the intersection of these arcs will be the ship's position. If a Mercator's Chart is used the zenith distances must be measured at the side. If the meridian of Greenwich is too far distant, the stars' positions can be referred to any known meridian, a list of which can be found in the N. A., and all of which are reliable. The number of stars observed need not be confined to two. If the sun is observed it will be necessary to turn the M. T. G. into apparent time. If the hours are less than 12, the apparent time turned into arc will be longitude W.; if the hours are more than 12, substract them from 24, and the difference turned into arc will be longitude E.

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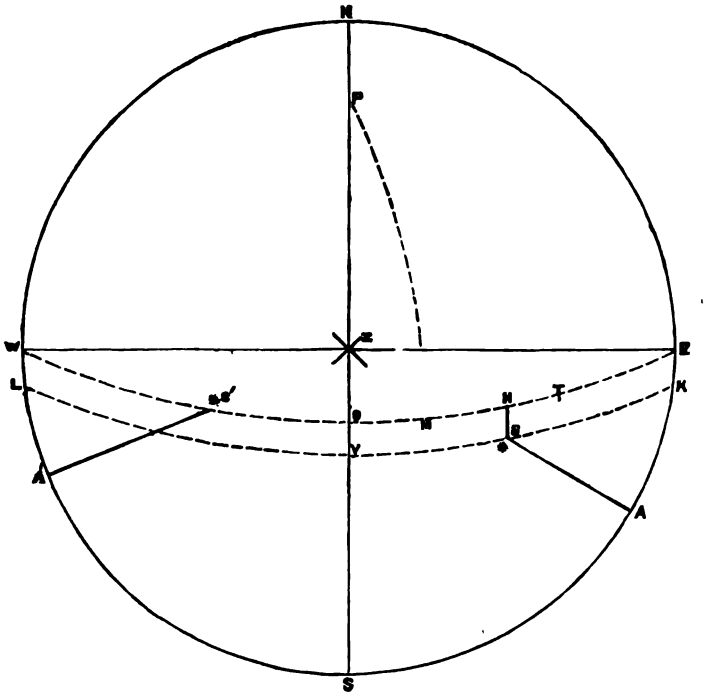
The accompanying figure will illustrate the example. For convenience sake I assume the observer's latitude is 20° N. Let the




circle N E S W represent the horizon, N S the meridian of the observer, E W the prime vertical, P the pole, E Q W the equator celestial or terrestrial, L V K the parallel of 10° S declination or latitude, P M the meridian of Greenwich, r the first point of Aries, 24 h-r H the right ascension of the star S, 24 h-r M the sidereal time Greenwich, then H M will be the longitude of the star S, S A the altitude, and H S the latitude, 24 h-r S′ the right ascension of the star S′, M S′ its longitude, S′ A′ its altitude, and for latitude the equator. Now take the zenith distance 50° in the dividers, place one leg on S, and draw the small arc to the N.W$^{d}$., then take the zenith distance 40° in the dividers, and place one leg on S′, and draw the small arc to the N.E$^{d}$., the point of intersection Z will be the place of the observer.

RICHARD LADD, F.R.A.S.

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## FOREIGN VERSUS ENGLISH SAILORS.

*To the Editor of the "Nautical Magazine."*

SIR,—I naturally expected that my adverse comments on the British merchant sailor of to-day, which you were good enough to publish, would call forth other expressions of opinion, and I am glad to find that all shipmasters do not hold the same gloomy views as I do, but which are endorsed by a very large number of masters and mates with whom I have talked on the subject. This being the case, I cannot altogether come to the conclusion that my unfortunate experiences are due to my own "inherent peculiarities as a commander."

It is luckily my lot at present to have to sail with foreign crews, and I cannot help contrasting the discipline, the cleanliness, the amount of work got through, and also the comfort obtainable on board my own ship as compared with vessels manned by English sailors, of course very much to the disadvantage of the latter.

One of the largest mail steamship companies found it impossible, with English crews on board their ships, to accomplish the work necessary to be done, and had eventually to man all their vessels with Lascars, and these vessels are certainly conducted as smartly as any merchant ships afloat. Does not this look as if other people had my views? Ask dockmasters, pilots, harbour authorities, water police, &c., who give them the most trouble, and you will find them almost unanimous in declaring that the English sailor is the most troublesome and incompetent. In a foreign port, who are the men who are constantly appealing to the charity of the British residents? Who are the degraded-looking loafers and "beach combers" who idle about in the vicinity of the docks or landing places, and offend the passer-by with the most disgustingly foul and obscene language? Who compose the greater part of the chain gang, who have to sweep the streets in the morning (a very excellent punishment, that obtains in some ports, for the drunk and disorderly of the previous night)? It is as true as it is sad that the majority of these are English sailors.

I am asked whether it is not more patriotic to ship Englishmen; but in these days of fierce competition, economy, expedition, and efficiency are more potent factors than patriotism. Captain Vyvyan

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deeply regrets that I should have found it necessary to characterise the British seaman in such terms. I also deeply regret that the character of the majority of the men who ship as British seamen should be such as to render it necessary; and which I quite agree with your correspondent in considering "a national evil of the gravest importance." My previous letter was not written with the sole object of casting odium on the English sailor, but that the lamentable state of affairs may be more fully recognised, and so perhaps eventually cause steps to be taken to raise his mental and moral status.

Statistics are adduced, in the letter I have been quoting, as to the amount of money deposited with the cashier of the London Sailors' Home, but it is not stated that the whole amount was deposited by English sailors; and as it appears only the comparatively small sum of £6,480 was remitted to *British* homes, it looks very much as if the greater part of the deposits were made by foreigners. However, it seems to me to be quite compatible for a man to be of a saving disposition, and at the same time to be an unmitigated loafer.

I fail to see the connection between the questions "Observer," dating from North Shields, asks, and the subject of "Foreign *versus* English Sailors." They appear to me to be so entirely irrelevant and so puerile, that it is hardly necessary to occupy your valuable space by answering them. Either the facts are as I state them, or they are not. But I am quite convinced that the consensus of opinion is on my side of the question.

As both your correspondents appear to be curious as to my nationality, I beg to state that I am English, and have never sailed in other than English ships; although I do not see how that fact bears much on the subject in hand.

Yours, &c., COSMOPOLITE.

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## STORMS.

*To the Editor of the "Nautical Magazine."*

Dear Sir,—I beg to offer you some remarks on the subject of storms, in which, for many years, I have taken a great interest.

The first is the remarkable change of temperature attending the

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veering of the wind from S.W. to N.W. in the Atlantic gales. This seems not to be called for by the difference in latitude between the northern and southern limits of the gales, especially when their areas are of small dimensions.

The second is about the incomplete state of the front part of the gale when looked at as a rotating wind, that is to say, the E. and N. parts are nearly always less developed than the S. and W. In an article which appeared in your journal the reason for this is considered probably to be the little difference in the barometric pressure, between these parts of the storm and the adjacent area of low pressure to the north.

Another reason for these anomalies may be given, though I dare not judge about which is the best.

In a paper, published many years ago, by the Meteorological Institution, in Utrecht, with reference to some ships in the North Atlantic, it was stated that the crews had seen a storm rage above their heads and, after some time, encountered it, exactly from the direction in which it was expected to come, judging from the changing direction of the drift of the clouds, as the gale passed on overhead.

As far as I remember, Piddington also writes about cyclones raging high up amongst the clouds, and draws the conclusion that, in some cases, they will form in the higher regions and gradually settle down. This theory is now given up, I believe.

The above-named paper gives a very ingenious explanation of this phenomenon.

Any object which is put into a rotatory motion has a tendency to keep such a position, as it is moving along, that its axis is always parallel to any position it has had before, just as is the case with the axis of the earth.

Thus, a storm, forming in a certain place, will have its axis perpendicular to the horizon of that place, and the storm "disc" will have a horizontal position; but, after having advanced 1,200' the axis will incline 20° from the perpendicular and the front part of the storm will be lifted in the same proportion. Now if, for the sake of simplicity, we consider the storm to be formed like a low cylinder, the wind in the right semi-circle, if the storm travels

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eastward, will draw upwards and in the left it will blow downwards.

The consequence of this will be that the air in the right semi-circle, as it ascends, will be cooled off and its moisture condensed and brought down as rain, while the same current, as it descends in the left semi-circle, brings with it the cold temperature of the upper regions.

The front part of the gale being lifted up from the surface of the earth will account for its irregularity in that part.

If this theory be correct, it will of course apply also in the southern hemisphere, though the names of the rising and descending semi-circles there will be reversed.

I do not think that the tropical storms show this peculiarity to the same extent, and it is very likely that gravity in those regions will have a greater effect upon them than in higher latitudes.

I put it to you, Mr. Editor, to decide whether these "notions" be worthy of room in your Magazine.

Gothenburg, August 16th, 1884. A. A. B.

[Our pages are always open to the intelligent discussion of questions affecting the safety of navigation and the development of knowledge concerning the conditions under which navigation is carried on, but, of course, it is understood, that we do not always endorse the opinions expressed by our correspondents.—Ed. *N. M.*]

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## CONTRIBUTION TO AVERAGE, WITHOUT TOTAL LOSS.

*To the Editor of the "Nautical Magazine."*

Sir,—Insurance on vessels being a subject in which many are interested, the object should be to get the mutual system established on a sound basis, the present general system of contribution to average being unequal, and detrimental to the interests of vessels of high value, *there being no increase of risk beyond those of lower value.*

After carefully going through the averages and total losses of a mutual insurance association for the last ten years, I estimate £4 5s. per cent. per annum is paid for average alone—(and not likely to be less). Under I have sketched out the different effects of an unsound and a sound system, and trust your support will

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be given to a "very necessary change" in the general run of mutual insurance associations, by the adoption of the tonnage system.

I am, yours truly,

THOS. SMAILES.

Whitby, August 19th, 1884.

SYSTEM OF CONTRIBUTION TO AVERAGE WITHOUT TOTAL LOSS IN THE GENERAL MUTUAL S.S. INSURANCE ASSOCIATIONS.

| Vessel. | Gross Tons. | Full Value accepted. | Value entered for insurance | Contribution to Average, say £100. | Contribution to Average estimated at £4 5s. per cent. per annum, showing difference from A to E. | | | | | Per cnt. per ann. | Pays per ann. more than A. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | £ | £ | £ s. d. | | | | | £ | £ s. d. | £ s. d. |
| A | 1400 | 14000 | 2000 | 20 0 0 | | | | | 2000 | 4 5 0 | 85 0 0 |
| B | 1400 | 16000 | 2000 | 20 0 0 | B has to insure more than A | | | | 2000 | 4 5 0 | 85 0 0 |
| C | 1400 | 18000 | 2000 | 20 0 0 | C | ,, | ,, | A | 4000 | 4 5 0 | 170 0 0 |
| D | 1400 | 20000 | 2000 | 20 0 0 | D | ,, | ,, | A | 6000 | 4 5 0 | 255 0 0 |
| E | 1400 | 22000 | 2000 | 20 0 0 | E | ,, | ,, | A | 8000 | 4 5 0 | 340 0 0 |
| | | | 10000 | 100 0 0 | | | | | | | |

SOUND SYSTEM ESTABLISHED BY THE "WELL DECK" MUTUAL INSURANCE ASSOCIATION.

| Vessel. | Gross Tons. | Full value accepted. | Value entered for insurance | Proportion of Tons Contributing to Average. | Rate per Ton. | Amount of Contribution. | Plus tons insured elsewhere. | Rate per Ton. | Amount | Total. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | £ | £ | Tons. | s. d. | £ s. d. | Tons. | s. d. | £ s. d. | £ s. d. |
| A | 1400 | 14000 | 2000 | 200 | 2 6 | 25 0 0 | 1200 | 2 6 | 150 0 0 | 175 0 0 |
| B | 1400 | 16000 | 2000 | 175 | 2 6 | 21 17 6 | 1225 | 2 6 | 152 2 6 | 175 0 0 |
| C | 1400 | 18000 | 2000 | 156 | 2 6 | 19 10 0 | 1244 | 2 6 | 155 10 0 | 175 0 0 |
| D | 1400 | 20000 | 2000 | 140 | 2 6 | 17 10 0 | 1260 | 2 6 | 157 10 0 | 175 0 0 |
| E | 1400 | 22000 | 2000 | 127 | 2 6 | 15 17 6 | 1273 | 2 6 | 159 2 6 | 175 0 0 |
| | 7000 | | | 798 | 2 6 | 99 15 0 | 6202 | 2 6 | 775 5 0 | 875 0 0 |
| | | | | | | | | | | Tons 7000 @ 2/6 |

## OUR LIBRARY TABLE.

Our readers will find, this month, an unusual supply of Nautical Notices—between 40 and 50—to which they must give their attention. The *Notices to Mariners* and *Hydrographic Notices* (British and Foreign) have been in excess of the quantity generally to hand. We must mention that after many years of assiduous labour in and

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careful supervision over, the Hydrographic Office of the Admiralty, Captain Sir FREDERICK J. O. EVANS, K.C.B., retires from the department as Hydrographer, and he is succeeded by Commander W. J. L. WHARTON, an officer who has been for many years engaged in the surveying service and is consequently well qualified for the office of Hydrographer, as he may be considered to have graduated towards that step.

We must call to the special notice of our readers the "Regulations for Preventing Collisions at Sea," which will be in force on and after the 1st September, 1884, issued in pursuance of the Merchant Shipping Act Amendment Act, 1862; they will be found re-printed in our pages for this month.

The books, pamphlets, and papers on our table are as follows:— The *Quarterly Weather Report of the Meteorological Office* (new series), Part III., July-September, 1876, and the *Monthly Weather Report of the Meteorological Office* for February, 1884; both published by the authority of the Meteorological Council, and containing the usual quota of carefully prepared diagrams of the state of the weather, with explanatory tables and letter-press. The quarterly number (July), of *The Shipwrecked Mariner* continues the list of great gales, and furnishes various maritime notes and jottings of a very readable character.

*List of Shipping issued by the Department of Marine and Fisheries*, being a list of vessels on the Registry Books of the *Dominion of Canada* on the 31st day of December, 1883 (Ottawa): and *Reports of the Board of Steamboat Inspection*, and *Examinations of Masters and Mates* up to the 31st day of December, 1883, (Ottawa). These publications are chiefly statistical; at the ports of Quebec, St. John, Halifax and Yarmouth there were a total of 178 successful candidates for certificates, viz., 79 masters, and 94 mates.

*L'Année Maritime* VII^e^ Année for 1882 (Paris, Challamel Ainè) is a succinct review of maritime operations and naval work, French and Foreign, and enters very minutely into details of every kind in so far as shipping is concerned. *Bulletin de la Société de Géographie de l'Est*, 2^e^ trimestre for 1884 (Nancy) is full of information geographical and meteorological, and shows that the Society is

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flourishing. Our old friend the *Revue Maritime et Coloniale* for August (Paris), contains an excellent paper on the typhoons of China and Japan; also a valuable note on the telegraphic determination of difference of longitude in South America; and the article on "Geometrical Methods" is continued.

We have before us the fifth number of *Entscheidungen des Ober-Seeamts und der Seeämter des Deutschen Reichs* (Hamburg), which give excellently summarised reports of Courts of Inquiries. *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft VII. continues the paper on "Volcanic Eruptions in Sunda Strait;" and has more to say on "Chronometers" and "German Polar Stations." *Meteorologische Zeitschrift* (Berlin) Nos. 2 to 6—February to May—edited by Dr. W. Köppen for the German Meteorological Society, keep us well posted in the proceedings of a society doing good work in a department in which we are specially interested.

*Rivista della Marina Mercantila*, No. 8 (Trieste), contains, among other interesting matter, a paper on the present condition of the Austro-Hungarian Mercantile Marine, and a continuation of the series upon Maritime Law. *Rivista Marittima* (Rome), July-August, contains an interesting paper on the Panama Canal, illustrated by some admirable maps and continuations of the series we have noticed before.

We have also received *Revista Maritima Brazileira* (Rio de Janeiro), June, *Boletin de la Sociedad Geográfica de Madrid* (Madrid), No. 6, and *Revista del Boletin Official de las Armas Generales e Institutos de Guardia Civil y Carabineros* (Manila), No. V.

We are in receipt of the latest numbers of *Hansa; Das Schiff; Le Yacht; l'Avenir Militaire;* the *New York Maritime Register;* the *Nautical Gazette* (U.S.); *Forest and Stream* (U.S.); the *Marine Journal of Cincinnati;* the *Scientific American;* the *Dial* (U.S.); and the *San Pedro Shipping Gazette.*

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## MARINE INVENTIONS.

*The following list has been compiled for this Journal by Messrs. W. P. Thompson and Boult, British and International Patent and Trade Mark Agents and Consulting Engineers, of* 323, *High Holborn, London, W.C., and* 6, *Lord Street, Liverpool :—*

### PATENTS PUBLISHED.

5889. 15th November, 1883. William Horatio Harfield, of the Mansion House Buildings, in the City of London, and George Thomas Burden, of Newcastle-upon-Tyne, in the county of Northumberland, engineer. "Improvements in steering gear for ships." The main object of the invention is to provide a steering gear which, in the event of the steam supply being inadvertently cut off, will automatically enable the steering gear to be worked by hand. The usual steering wheel is employed, and on its shaft is placed a pinion which can be moved longitudinally on the latter by means of a special double clutch arrangement. This consists of an incline and a straight surface at either end of the boss of the sliding pinion; the said inclines bear against corresponding inclines on the steering wheel shaft in such a manner that, if the wheel be turned, the pinion moves forward or aft according to the direction of the wheel's motion. The sliding pinion is coupled to a valve which governs the supply of the usual steering engine. The sliding pinion is constantly in gear with a spur-wheel, the shaft of which carries a drum, operating chains passing to the quadrant or tiller.

5669. 7th December, 1883. Robert Wyllie, of West Hartlepool, in the county of Durham. "Improvements in marine engines." In carrying this invention into practice with a three cylinder engine the low pressure cylinder is placed between the two others, and the exhaust steam is led down the back column and enters the condenser at about the middle of its length. The condenser is of the ordinary type. The cylinders are placed as close together as possible, and the valve casings are all at the sides. The valve motions are of the "fixed link" kinds, but the parts are arranged in a novel manner. A single excentric is used for each valve, the

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actions for reversing and varying the cut-off being obtained by altering the oblique position of the link or guide-piece. The rod of the excentric can act as a lever with a moving fulcrum formed by a pin on the lever, to which is jointed a slide block fitted to work on or within the link or guide-piece.

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BRAZIL.—*Imbetiba.—New Port.*—In a small bay two miles to the S.W. of Macahé River, in lat. 22° 21′ S., long. 41° 48′ W., is the new harbour of Imbetiba, a free port, which is an open roadstead with a breakwater and pier. Vessels can lie alongside the pier in 16 feet at low water. The railroad runs on the pier receiving cargo directly from the vessels. Pilots can be obtained off Santa Anna island.

PORT ADELAIDE RIVER.—SOUTH AUSTRALIA.—The Marine Board have recently prepared an excellent chart of the Port Adelaide River, to which the attention of owners, masters and charterers of ships, and other persons interested, is especially called. On completion of the operations, on which two (there will shortly be three) large dredgers are now engaged, the *channels* between the lighthouse and the inner harbour will be not less than 250 ft. wide and 20 ft. deep at ordinary low water springs, or about 28 ft. 3 in. at ordinary high water springs. Other navigable parts of the river will be, and in fact are now, both wider and deeper. The depth in the harbour will be not less than 22 ft. at low water, or about 30 ft. 8 in. at high water, for a width of from 300 ft. to 500 ft., which, however, is not the full width of the harbour. Wharfage accommodation may at present be found for vessels drawing 24 ft. The lowest tide recorded during March was 18 ft. 6 in., the highest, 26 ft. 9 in., and the fifty-eight observations at high water gave from 22 ft. to 27 ft. It may therefore be said that, apart from the improvements effected from day to day, shipmasters may find in the shallowest part of the channel, twice in every twenty-four hours, a depth of from 22 ft. to 27 ft., and in many places a much greater depth.

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# TIDE TABLES FOR SEPTEMBER, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | London Bridge. | | Hull. | | North Shields | | Leith. | | Devonport. | | Dover. | | Weston Super-mare. | | Liverpool. | | Greenock | | Queenstown | | Kingstown. | | Londonderry. | | Brest. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| M | 1 | 10 37 | 11 18 | 2 51 | 3 25 | — | 0 31 | 11 24 | 11 54 | 1 36 | 2 14 | 7 33 | 8 8 | 2 55 | 3 32 | 8 0 | 8 32 | 8 32 | 9 5 | 1 19 | 1 55 | 7 45 | 8 17 | 4 55 | 5 19 | 0 19 | 0 52 |
| Tu | 2 | 11 45 | — | 3 57 | 4 26 | 1 0 | 1 36 | — | 0 21 | 2 49 | 3 21 | 8 38 | 9 3 | 4 7 | 4 37 | 9 0 | 9 24 | 9 35 | 10 1 | 2 26 | 2 53 | 8 47 | 9 14 | 5 42 | 6 4 | 1 22 | 1 48 |
| W | 3 | 0 14 | 0 39 | 4 51 | 5 11 | 1 50 | 2 11 | 0 44 | 1 4 | 3 48 | 4 18 | 9 26 | 9 48 | 5 4 | 5 28 | 9 44 | 10 3 | 10 24 | 10 45 | 3 17 | 3 39 | 9 38 | 9 58 | 6 24 | 6 44 | 2 10 | 2 29 |
| Th | 4 | 1 0 | 1 21 | 5 30 | 5 49 | 2 29 | 2 46 | 1 23 | 1 42 | 4 37 | 4 59 | 10 9 | 10 30 | 5 50 | 6 11 | 10 22 | 10 40 | 11 6 | 11 27 | 3 59 | 4 19 | 10 16 | 10 38 | 7 4 | 7 24 | 2 48 | 3 7 |
| F | 5 | 1 42 | 1 59 | 6 8 | 6 27 | 3 8 | 3 21 | 2 1 | 2 20 | 5 19 | 5 39 | 10 51 | 11 11 | 6 32 | 6 52 | 10 59 | 11 18 | 11 47 | — | 4 39 | 4 59 | 10 50 | 11 8 | 7 43 | 8 1 | 3 26 | 3 43 |
| S | 6 | 2 17 | 2 34 | 6 46 | 7 5 | 3 39 | 3 57 | 2 38 | 2 55 | 5 59 | 6 19 | 11 31 | 11 51 | 7 12 | 7 31 | 11 37 | 11 56 | 0 6 | 0 25 | 5 18 | 5 37 | 11 26 | 11 44 | 8 18 | 8 35 | 4 2 | 4 21 |
| S | 7 | 2 52 | 3 11 | 7 24 | 7 43 | 4 16 | 4 35 | 3 12 | 3 30 | 6 38 | 6 57 | — | 0 11 | 7 50 | 8 9 | — | 0 15 | 0 44 | 1 3 | 5 56 | 6 16 | — | 0 3 | 8 52 | 9 10 | 4 40 | 4 59 |
| M | 8 | 3 30 | 3 49 | 8 2 | 8 21 | 4 55 | 5 15 | 3 49 | 4 9 | 7 15 | 7 33 | 0 32 | 0 53 | 8 27 | 8 45 | 0 34 | 0 53 | 1 23 | 1 43 | 6 36 | 6 56 | 0 28 | 0 43 | 9 28 | 9 46 | 5 18 | 5 37 |
| Tu | 9 | 4 7 | 4 28 | 8 41 | 9 1 | 5 35 | 5 56 | 4 30 | 4 51 | 7 53 | 8 13 | 1 14 | 1 36 | 9 3 | 9 22 | 1 18 | 1 38 | 2 3 | 2 23 | 7 16 | 7 36 | 1 4 | 1 25 | 10 5 | 10 25 | 5 56 | 6 16 |
| W | 10 | 4 48 | 5 9 | 9 22 | 9 44 | 6 18 | 6 40 | 5 13 | 5 36 | 8 33 | 8 54 | 1 58 | 2 20 | 9 41 | 10 1 | 1 53 | 2 14 | 2 43 | 3 4 | 7 56 | 8 17 | 1 47 | 2 10 | 10 47 | 11 15 | 6 38 | 7 1 |
| Th | 11 | 5 31 | 5 54 | 10 7 | 10 34 | 7 4 | 7 32 | 6 1 | 6 29 | 9 16 | 9 41 | 2 44 | 3 9 | 10 21 | 10 43 | 2 37 | 3 2 | 3 27 | 3 51 | 8 39 | 9 4 | 2 34 | 3 1 | 11 48 | — | 7 27 | 7 55 |
| F | 12 | 6 20 | 6 47 | 11 5 | 11 40 | 8 3 | 8 37 | 6 59 | 7 33 | 10 8 | 10 37 | 3 35 | 4 2 | 11 8 | 11 38 | 3 29 | 3 59 | 4 17 | 4 46 | 9 32 | 10 3 | 3 30 | 4 3 | 0 25 | 1 6 | 8 25 | 8 59 |
| S | 13 | 7 18 | 7 58 | — | 0 20 | 9 16 | 10 0 | 8 10 | 8 52 | 11 10 | 11 48 | 4 32 | 5 6 | — | 0 15 | 4 34 | 5 15 | 5 19 | 5 57 | 10 40 | 11 23 | 4 40 | 5 20 | 1 51 | 2 37 | 9 38 | 10 22 |
| S | 14 | 8 32 | 9 16 | 1 1 | 1 41 | 10 44 | 11 26 | 9 38 | 10 20 | — | 0 31 | 5 48 | 6 28 | 0 58 | 1 43 | 6 3 | 6 51 | 6 39 | 7 22 | — | 0 7 | 6 1 | 6 41 | 3 20 | 3 58 | 11 7 | 11 50 |
| M | 15 | 10 2 | 10 48 | 2 21 | 2 59 | — | 0 4 | 10 58 | 11 38 | 1 15 | 1 57 | 7 4 | 7 44 | 2 26 | 3 8 | 7 32 | 8 10 | 8 8 | 8 42 | 0 51 | 1 32 | 7 19 | 7 55 | 4 30 | 5 0 | — | 0 30 |
| Tu | 16 | 11 21 | 11 55 | 3 35 | 4 8 | 0 39 | 1 10 | — | 0 4 | 2 27 | 3 18 | 8 20 | 8 51 | 3 48 | 4 24 | 8 42 | 9 11 | 9 17 | 9 48 | 2 9 | 2 40 | 8 39 | 9 1 | 5 27 | 5 51 | 1 5 | 1 35 |
| W | 17 | — | 0 26 | 4 37 | 5 2 | 1 37 | 2 1 | 0 31 | 0 55 | 3 48 | 4 10 | 9 18 | 9 43 | 4 56 | 5 24 | 9 35 | 9 57 | 10 15 | 10 40 | 3 9 | 3 34 | 9 29 | 9 52 | 6 15 | 6 38 | 2 0 | 2 23 |
| Th | 18 | 0 51 | 1 15 | 5 24 | 5 46 | 2 23 | 2 43 | 1 18 | 1 40 | 4 35 | 4 58 | 10 6 | 10 28 | 5 48 | 6 11 | 10 18 | 10 39 | 11 3 | 11 25 | 3 57 | 4 18 | 10 12 | 10 31 | 7 1 | 7 22 | 2 44 | 3 4 |
| F | 19 | 1 35 | 1 56 | 6 7 | 6 27 | 3 2 | 3 21 | 2 0 | 2 19 | 5 19 | 5 39 | 10 49 | 11 10 | 6 32 | 6 52 | 10 59 | 11 18 | 11 46 | — | 4 39 | 4 58 | 10 49 | 11 7 | 7 42 | 8 0 | 3 24 | 3 42 |
| S | 20 | 2 15 | 2 35 | 6 46 | 7 4 | 3 39 | 3 57 | 2 37 | 2 54 | 5 59 | 6 18 | 11 29 | 11 48 | 7 10 | 7 28 | 11 36 | 11 54 | 0 6 | 0 24 | 5 17 | 5 35 | 11 25 | 11 43 | 8 16 | 8 32 | 4 0 | 4 18 |
| S | 21 | 2 51 | 3 8 | 7 22 | 7 39 | 4 14 | 4 31 | 3 11 | 3 28 | 6 36 | 6 52 | — | 0 7 | 7 45 | 8 2 | — | 0 12 | 0 42 | 1 0 | 5 58 | 6 10 | — | noon | 8 47 | 9 3 | 4 35 | 4 52 |
| M | 22 | 3 27 | 3 43 | 7 56 | 8 13 | 4 48 | 5 5 | 3 45 | 4 2 | 7 7 | 7 22 | 0 26 | 0 45 | 8 19 | 8 35 | 0 29 | 0 46 | 1 18 | 1 35 | 6 27 | 6 44 | 0 17 | 0 34 | 9 19 | 9 35 | 5 9 | 5 26 |
| Tu | 23 | 4 1 | 4 17 | 8 30 | 8 47 | 5 23 | 5 41 | 4 19 | 4 36 | 7 37 | 7 52 | 1 8 | 1 21 | 8 50 | 9 5 | 1 8 | 1 19 | 1 52 | 2 8 | 7 1 | 7 18 | 0 52 | 1 10 | 9 51 | 10 7 | 5 42 | 5 58 |
| W | 24 | 4 33 | 4 49 | 9 4 | 9 21 | 5 59 | 6 17 | 4 53 | 5 11 | 8 7 | 8 22 | 1 39 | 1 56 | 9 20 | 9 35 | 1 35 | 1 51 | 2 24 | 2 40 | 7 34 | 7 50 | 1 28 | 1 46 | 10 24 | 10 43 | 6 15 | 6 32 |
| Th | 25 | 5 4 | 5 21 | 9 38 | 9 56 | 6 35 | 6 54 | 5 30 | 5 50 | 8 37 | 8 52 | 2 14 | 2 32 | 9 49 | 10 4 | 2 8 | 2 25 | 2 57 | 3 14 | 8 6 | 8 23 | 2 4 | 2 23 | 11 4 | 11 20 | 6 50 | 7 10 |
| F | 26 | 5 41 | 6 2 | 10 16 | 10 40 | 7 15 | 7 39 | 6 11 | 6 34 | 9 10 | 9 30 | 2 51 | 3 11 | 10 19 | 10 38 | 2 44 | 3 4 | 3 38 | 3 58 | 8 42 | 9 3 | 2 48 | 3 6 | 11 59 | — | 7 31 | 7 54 |
| S | 27 | 6 23 | 6 49 | 11 8 | 11 41 | 8 6 | 8 37 | 7 0 | 7 31 | 9 53 | 10 20 | 3 32 | 3 57 | 11 3 | 11 34 | 3 28 | 3 57 | 4 15 | 4 42 | 9 28 | 9 58 | 3 32 | 4 2 | 0 32 | 1 9 | 8 21 | 8 54 |
| S | 28 | 7 15 | 7 48 | — | 0 18 | 9 14 | 9 54 | 8 8 | 8 48 | 10 51 | 11 27 | 4 26 | 4 59 | — | 0 10 | 4 32 | 5 12 | 5 14 | 5 50 | 10 34 | 11 14 | 4 37 | 5 14 | 1 50 | 2 32 | 9 31 | 10 12 |
| M | 29 | 8 25 | 9 8 | 0 55 | 1 32 | 10 35 | 11 14 | 9 28 | 10 7 | — | 0 8 | 5 34 | 6 11 | 0 49 | 1 30 | 5 56 | 6 38 | 6 29 | 7 9 | 11 55 | — | 5 52 | 6 28 | 3 11 | 3 47 | 10 55 | 11 36 |
| Tu | 30 | 9 52 | 10 29 | 2 8 | 2 48 | 11 50 | — | 10 43 | 11 17 | 0 51 | 1 32 | 6 49 | 7 27 | 2 10 | 2 48 | 7 17 | 7 58 | 7 48 | 8 25 | 0 34 | 1 12 | 7 4 | 7 38 | 4 19 | 4 47 | — | 0 18 |



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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* − *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −3 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 13 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 3 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 21 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbelliton | −0 23 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 8 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 3 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 58 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 58 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 3 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 43 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 13 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 18 | Devonport |
| Peterhead | −1 48 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 33 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 3 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 58 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 22 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 23 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 43 | London |
| Youghall | +0 13 | Queenstown |

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# MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 263 | England—East Coast—Haisbro' Lights | Alteration in character. |
| 264 | „ „ River Humber—Hull Road | Light-buoy removed. |
| 265 | „ „ Winterton Light | Not to be changed. |
| 266 | „ „ Fern Island Light | Alteration in character. |
| 267 | „ West Coast—Liverpool Bay | Alteration in buoys and lights. |
| 268 | Scotland—West Coast—Hebrides—Hellisay Sound | Discovery of rock. |
| 269 | „ „ Barra Island | Beacons in Castle Harbour. |
| 270 | „ „ Sound of Mull—Loch Aline | Beacon on Bo Lorcain. |
| 271 | „ „ Mull of Cantyre | Fog-signal at lighthouse. |
| 272 | Ireland—North Coast—Lough Foyle—Londonderry | Alterations in buoyage. |
| 273 | „ West Coast—River Shannon—Foynes Harbour | Alterations in buoyage. |
| 274 | North Sea—Belgium—Nieuport | Harbour lights shown. |
| 275 | „ River Schelde | Lights altered in W. Schelde River. |
| 276 | Baltic—Aland Sea—Lagskar | Light altered in arc. |
| 277 | „ Kalmar Sund—Utgrunden | Lights to be altered in character. |
| 278 | Mediterranean—France—Toulon Outer Road | Alterations in lights. |
| 279 | „ Pantellaria Island—Curritia (Spadillo) Point | New light. |
| 280 | „ Sicily—Ustica Island—Gavazzi Point | Intended light. |
| 281 | „ Adriatic — Quarnero Gulf — Unie Island—Netak Point | Alterations in light. |
| 282 | „ „ Albania—Gulf of Drin | New lights. |
| 283 | „ Greece—Salamas Bay—Cape Themistocles | Alteration in character of lights. |
| 284 | „ Syria—Tripoli Roads—Ramkine (Bluff) Islet | Alteration in light. |
| 285 | Red Sea—Nubia—Sawákin | Sailing directions. |
| 286 | Bay of Bengal—Madras | Light on Pier. |
| 287 | „ Akyal Approach—Oyster Reef | Marked by buoy. |
| 288 | Eastern Archipelago—Sunda Strait | Telegraph Cable. |
| 289 | Japan—Sikok—Riudsu-saki | New light. |
| 290 | „ Kiusiu—Hakosaki Bay—Fukuoka | New light. |
| 291 | Australia — Moreton Bay — Brisbane River | Tide signals, &c.; light-vessel withdrawn. |
| 292 | „ South Coast—Cape Nelson | New light. |
| 293 | South Australia—Investigator Strait | Bell-buoy on telegraph cable. |
| 294 | „ „ „ Kangaroo Island—Nepean Bay | New buoy. |



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MONTHLY ABSTRACT OF NAUTICAL NOTICES—*continued.*

| No. | PLACE. | SUBJECT. |
|---|---|---|
| 295 | SOUTH AUSTRALIA—S.W. Coast—Waterloo Bay | Mooring buoys. |
| 296 | SOUTH PACIFIC OCEAN—Off Barrier Reef | Sand bank. |
| 297 | SOUTH AMERICA — Magellan Strait—Sandy Point | Low (red) leading light altered in position. |
| 298 | „ „ Staten Island — Cape St. John | New light. |
| 299 | WEST INDIES—New Granada—Savanilla Harbour | Character of light. |
| 300 | UNITED STATES—Florida—Sanibel Island | New light. |
| 301 | „ „ Georgia — St. Simon Sound and Doboy Inlet | Bell buoys. |
| 302 | „ „ Delaware River — Cape Henlopen | Dangerous state of beacon light-house. |
| 303 | „ „ Maine—Machias Bay—Libby Island | New fog-signal. |
| 304 | NOVA SCOTIA—Bay of Fundy—Advocate Harbour | New light. |
| 305 | „ „ Lunenburg Harbour — Battery Point | Alteration in character of light. |
| 306 | NEW BRUNSWICK — Miramichi River — Newcastle | New light. |
| 307 | CANADA — Gulf St. Lawrence — Chaleur Bay—Little Belledune Point | New light. |
| 308 | „ „ „ Ristigouche River—Garde Point | Light-vessel continued. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

263.—ENGLAND.—*East Coast.—Haisbro' Lights.—Entire Alteration in Character.*—In accordance with Notice in 1883, Haisbro' low light will, on the 1st September, 1884, be discontinued. Also, on the same date, Haisbro' high light will be made *occulting*, that is to say, it will once in *every half-minute* suddenly *disappear for five seconds*, and then as suddenly reappear at full power.

264.—ENGLAND.—*East Coast.—River Humber.—Removal of Light Buoy in Approach to Hull Road.*—With reference to Notice 202, p. 611, the light buoy placed at the moorings of No. 11 buoy, painted in black and white vertical stripes, would be removed, and after that date the ordinary buoy would be again placed at its station.

265.—ENGLAND.—*East Coast.—Winterton Light.—Alteration in Character Cancelled.*—The proposed alteration in accordance with

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Notice 203, p. 611, will not be carried out, and the light will remain as at present, *fixed white.*

266.—ENGLAND.—*East Coast.—Fern Island Light.—Alteration in Character.*—In accordance with Notice 242, p. 700, the character of the high light of the Inner Fern has been altered, so that it now shows *two white* flashes, followed by a *red* flash. Each flash and each eclipse is of 20 seconds' duration.

267.—ENGLAND.—*West Coast.—Liverpool Bay.—Alteration in Lights and Buoys.*—It is intended about the end of August, 1884, to make the following alterations in the buoying and lighting of Liverpool bay :—

*Crosby Lighthouse.*—The masking of the *fixed white* light of Crosby lighthouse will be altered so as to show the light between the bearings (from seaward) of S.S.E. ½ E. and East.

*Formby Lightship* (*red revolving* light) will be shifted 2½ cables West from its present position.

*Bar Lightship* (*fixed white* light) will be shifted ⅞ mile S.W. from its present position.

*Queen Channel Buoys.*—The present stations of red can buoys Q 1, 2, 3, will be abolished, and the *south side* of Queen channel will be guarded as follows :—Q 1 red buoy will be stationed in 12 feet ½ mile W. by N. ½ N. from the present position of Q 4 red buoy. Red buoys Q 2, 3, 4, 5, will be stationed in a line bearing E. by S. ½ S. from the red buoy Q 1, ⅜ mile from each other ; Q 6 red buoy will take the station of the present Q 7, the latter being abolished. On the *north side* the stations of Q 1 and Q 2 black nun buoys will be altered as follows :—Q 1 black will be placed in 12 feet, being N. by W. ½ W. from Q 1 red buoy, distant one mile ; Q 2 black will be stationed on a line (S.E. ½ E.) between Q 1 black and Q 3 black, half-way between them.

*Victoria Fairway* buoy will be permanently removed.

*Remarks.*—From the N.W. lightship the new station of Bar lightship bears E. by S. ½ S. 8 miles. The Formby lightship bears from the latter E.S.E. 3½ miles : this bearing leads nearly in mid-channel between the red and black buoys of Queen channel. From Formby lightship, Crosby lightship bears S.E. ¾ E. (easterly), nearly 2¾ miles.



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268.—SCOTLAND.—*West Coast.—Hebrides.—Sound of Hellisay. —Rock on N.W. Extreme of Beatson Shoal.*—A pinnacle rock, having 8 feet water over it at low water spring tides, has been found on the N.W. extreme of Beatson shoal, situated in the fairway to North harbour. The rock lies with the following bearings: —The highest part of Hellisay island, N. 39° E.; S.W. extreme of Fuiay island, N. 46° W. *Variation*, 24½° *W.*

269.—SCOTLAND.—*West Coast.—Hebrides.—Barra Island.— Beacons in Castle Harbour.*—A beacon, consisting of a pillar coloured red, 10 feet above high water, has been erected on the southernmost of the rocks extending from Ornsay island. From the beacon, Sgeir Liath bears N. 52° W., distant 10½ cables. A beacon similar to that on Dubh Sgeir will shortly be placed on Sgeir a Scape. The tower on Sgeir Liath has the appearance of a black coloured cairn. *Variation*, 24½° *W.*

270.—SCOTLAND.—*West Coast.—Sound of Mull.—Loch Aline. —Beacon on Bo Lorcain.*—A beacon surmounted by a barrel and coloured red, has been placed on Bo Lorcain, with Loch Aline pier bearing N. 6° E., distant $2\frac{8}{10}$ths cables. *Variation*, 23° *W.*

271.—SCOTLAND.—*West Coast.—Peninsula of Cantyre.—Fog-Signal on Mull of Cantyre.*—On 15th September, 1884, a fog-signal will be established at Mull of Cantyre lighthouse, coast of Argyleshire:—The signal will be made from a fog-siren, which during thick or foggy weather, will give *two blasts* in quick succession *every four minutes*, the first blast being a high note, and the second a low note.

272.—IRELAND.—*North Coast.—Lough Foyle.—Londonderry.— Alterations in Buoyage.*—The colours of the buoys and perches marking the navigable channel of the harbour were to be altered on or about 1st August, 1884. On the completion of these alterations—all buoys and perches on the starboard-side of the channel, when entering the harbour from seaward, would be uniformly-coloured *black*; and those on the port-side *red.*

273.—IRELAND.—*West Coast.—River Shannon.—Foynes Harbour.—Alterations in Buoyage.*—On or about 1st September, 1884, the following alterations will be made in the buoyage of Foynes harbour, river Shannon:—

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*West Channel.*—The can buoy (Poulnathollon) marking the south side of the West channel will be replaced by a conical buoy.

*North Channel.*—The red can buoy marking Elbow rock, will be replaced by a black conical buoy.

The black can buoy marking Long rock, will be replaced by a red can buoy.

274.—North Sea.—*Belgium.—Harbour Lights Exhibited at Nieuport.*—Harbour lights are now exhibited from the extremities of the piers at the entrance of Nieuport harbour. The light on the East pier is *red*, visible between the bearings of N. 80° E., through east and south to S. 80° W., and should be seen from a distance of 5 miles. The light on the West pier is *green*, visible between the bearings of N. 64° E., through east and south to S. 64° W., and should be seen from a distance of 4 miles. The illuminating apparatus are placed on metal supports, elevated 26 feet above high water. Position, lat. 51° 9½′ N., long. 2° 43′ E. *Variation*, 16½° *W.*

275.—North Sea.—*River Schelde.*—On the 16th June, 1884, the following alterations were made in the lights in West Schelde river :—

*Alteration in the Sector of Niewepolder Light.*—The sector shown from Niewepolder light is visible between the bearing S. 10° W. and S. 74½° W. ; the western limit of visibility is 828 yards westward of black buoy No. 4.

*Red Sector shown from Borsele Light.*—A red sector is shown from Borsele light, and is visible over the S.W. side of the Suiker Plaat, or between the bearings of N. 14° W. and N. 28° W.

*Red Sector shown from Magere Merrie Light.*—A red sector is shown from Magere Merrie light, and is visible over the Waarde Plaat, or between the bearings of south through west, to W. by N. *Variation*, 16° *W.*

276.—Baltic.—*Aland Sea.—Alteration in Lagskär Light.*—On 18th July, 1884, the following alteration was made in the arc of visibility of Lagskär light, Aland sea :—it is now fixed *white*, visible between the bearing N. 72° W., through north, east, and south, to S. 49° W. *Variation*, 8° *W.*

277.—Baltic.—*Kalmar Sund.—Utgrunden Lights.—Intended Alteration in Character.*—In October, 1884, the following altera-

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tion will be made in the character of the lights exhibited from Utgrunden light-vessel, southern entrance to Kalmar sund:—The light-vessel will be replaced by a new vessel, from which will be exhibited one fixed *red* light.

278.—MEDITERRANEAN.—*France.—Toulon Outer Road.—Intended Alterations in Lights.*—On 1st September, 1884, the following alterations will be made in the lights of Toulon outer road:—

(1.) Grosse Tour light and the lights shown from the three light-vessels moored off the extremities of the harbour moles will be discontinued.

(2.) A light will be exhibited from a lighthouse erected on St. Mandrier mole head:—The light will be a *flashing white* light, with eclipses *every four seconds*, elevated 54 feet above high water, and should be visible in clear weather from a distance of 10 miles. The lighthouse, 38 feet high, is constructed of iron and painted white, with dwelling detached.

(3.) A light will be exhibited from a lighthouse erected on Grosse Tour mole head:—The light will be a fixed *green* light, elevated 44 feet above high water, and should be visible in clear weather from a distance of 5 miles. The lighthouse, 27 feet high, is constructed of iron, cylindrical in shape, and painted white, with dwelling detached. Position, lat. 43° 5′ 20″ N., long. 5° 55′ 25″ E.

(4.) A light will be exhibited from a lighthouse erected on Vieille mole head:—The light will be a fixed *red* light, elevated 45 feet above high water, and should be visible in clear weather from a distance of six miles. The lighthouse, 27 feet high, is constructed of iron, cylindrical in shape, and painted white, with dwelling detached.

*Note.*—The light-vessel (with two fixed green lights) moored on the S.W. edge of Ane bank for the use of French Government vessels, will be kept in position. The lights are not visible eastward of Grosse Tour mole.

279.—MEDITERRANEAN.—*Pantellaria Island.—Light on Curritia (Spadillo) Point.*—On 15th July, 1884, a light was exhibited from a lighthouse erected on Curritia (Spadillo) point, N.E. coast of Pantellaria island. The light is *fixed white*, showing a flash *every thirty seconds*, visible between the bearings N. 41° W., through

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west and south to S. 61° E., elevated 164 feet above the sea, and the flash should be seen from a distance of 17 miles, but the fixed light can be seen only 9 miles. The lighthouse tower, 69 feet high, rises from a two-storeyed house, the whole being painted white. Position, lat. 36° 49′ 25″ N., long. 12° 0′ 45″ E. *Variation*, 11° *W.*

280.—MEDITERRANEAN.—*Sicily.—North Coast.—Ustica Island.—Intended Light on Gavazzi Point.*—To be exhibited from a lighthouse on Gavazzi point, the S.W. extreme of Ustica island; it will be a *white* light, with flashes every *two minutes*, elevated 131 feet above the sea, and visible from a distance of 17 miles. The lighthouse will be a tower, 92 feet high, painted white, together with the dwelling-house.

281.—MEDITERRANEAN. — *Adriatic.—Gulf of Quarnero.—Unie Island.—Alterations in Netak Point Light.*—The following alterations have been made in the light exhibited on Netak point, S.W. side of Unie island:—The light now shows *fixed red* from S. by E. to S. by W., between which bearings lie the rock and shoals near the shore of Unie island. The light is also obscured to the south-eastward, so that it is not visible from Canidole islands, or from the channel between those islands and Unie island.

*Note.*—With the fixed white light of Netak point in sight, vessels will be clear of all dangers in the vicinity of Unie and Canidole islands. *Variation*, 10½° W.

282.—MEDITERRANEAN.—*Adriatic.—Albania.—Gulf of Drin.*—(1.) *Light on St. Giovanni Point.*—With reference to Notice 137, p. 824, on 15th July, 1884, a light would be exhibited on St. Giovanni point, west side of entrance to port St. Giovanni di Medua (Chinkin):—It is a *fixed red* light, elevated 59 feet above the sea, and visible from a distance of 5 miles. The illuminating apparatus is on a staff, close to the extremity of the point. Position, lat. 41° 48′ 30″ N., long. 19° 35′ 15″ E.

(2.) *Light on Cape Rodoni.*—Also, on 15th July, 1884, a light would be exhibited on Cape Rodoni (Ischin), western point of Rodoni road:—It is a *flashing white* light, showing a flash every *ten seconds*, elevated 131 feet above the sea, visible from a distance of 15 miles. The lighthouse consists of a tower, situated close to the

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extremity of the cape. Position, lat. 41° 35′ 10″ N., long. 19° 27′ 15″ E.

283.—MEDITERRANEAN.—*Greece.—Salamis Bay.—Approach to the Peiræus. — Alteration in the character of Cape Themistocles Lights.*—On 13th July, 1884, the following alteration would be made in the character of the light exhibited at Cape Themistocles, eastern side of approach to the Peiræus, Salamis bay:—The light is one fixed *red* light, visible from a distance of 8 miles.

284.—MEDITERRANEAN.—*Syria.—Approach to Tripoli Roads.—Alteration in Ramkine (Bluff Islet) Light.*—The light formerly shown from a mast is now exhibited from a tower recently erected on Ramkine island; elevated 67 feet above the sea, and should be seen from a distance of 15 miles.

285.—RED SEA.—*Nubia.—Approaches to Sawákin.*—The following information, concerning the approaches to Sawákin, has been received from H.M. surveying vessel *Myrmidon*:—The channel westward of Hind Kadám (Hinde Gadam) island, and in which are the two shoals reported by H.M.S. *Jumna* (see Notice 221, p. 616), should not be used. The southern of the shoals above referred to, is situated one mile S.S.W. ¼ W. of the position therein assigned, or in lat. 19° 12′ N., long. 37° 31′ E. The eastern channel from Barr Músa' Seghir (Barmosa Seggeer) island, passing southward of Sha'b Toueel, is unsafe without local knowledge, as several shoals, hitherto unknown, exist in the vicinity of Sha'bs Toueel and Gusser. The southern extreme of the reefs, north-eastward of Sawákin, bears N. 65¾° E. from the entrance of that harbour, distant $2\frac{8}{10}$ths miles. Pending further information, the approach from Mersá Sheikh Barud to the northward, and that from Tellah Tellah Seghir island to the south-eastward, should alone be used.

*Northern Approach.*—Arood Trelor mountain, in lat. 19° 34½′ N., long. 36° 55′ E., forms the best mark for making Sanganeb reef—the outer horse-shoe reef north-eastward of Mersá Sheikh Barud—from seaward. This mountain is high and whale-backed, and has, when seen from the eastward, a distinct notch on the south side of its summit; the next range to the northward is of the same height, but has several bold conical summits, with some remarkably pointed lower peaks. Sanganeb reef in lat. 19° 43′ 20″ N., long.

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37° 26′ 20″ E., bears N. 77¼° E. from Arood Trelor mountain, distant 30¼ miles. A beacon with pole is being constructed on this reef.

*Directions.*—Vessels should pass southward of Sanganeb reef, and steer S.W. by W. until the coast reef near Mersá Sheikh Barud is made; a course should then be steered, following the reef at 3 to 6 cables distance, to the entrance of Sawákin.

*Note.*—Shoal ground has been reported to exist 2 miles north-eastward of Sanganeb reef—caution therefore should be used when approaching the reef from that quarter.

*Beacons.*—Six stone beacons mark the edges of the reefs fringing the shores of Sawákin harbour. The two on the port-hand entering from seaward, are painted red and white in vertical stripes; those on the starboard-hand are white.

*Southern Approach, Shoals.*—A beacon is about to be erected on Kadd Hogeet, which lies 4 miles S.W. by S. from Two Islet reef. The channel between Kadd Etwid reefs and Sha'b ul Shubuk, is encumbered with reefs of from 4 to 7 fathoms. Two heads exist, with a depth of 3¼ fathoms, bearing respectively 6¼ miles S. 60° E., and 9¼ miles S. 63¾° E., from the south-western islet of Kadd Etwid group; this islet lies 1¾ mile from the shore reef, with Sawákin entrance bearing N. by W. ½ W., distant 11¼ miles. A reef, about 5 cables in breadth, with numerous shoal heads throughout its entire length, only one of which breaks with moderate sea, extends from lat. 19° 7¼′ N., long. 37° 31¾′ E., to lat. 19° 5¾′ N., long. 37° 25′ E.

*Directions.*—Vessels approching from Tellah Tellah Seghir Island, should pass close eastward of Kadd Hogeet, and then steer N.W. ¼ N. until Two Islet reef bears E. by S. ¼ S.; the course should then be altered to W. by N. ¼ N. to make the south-eastern reef of the Kadd Etwid group, on which the sea always breaks. Skirting this reef at the distance of one mile to avoid a spit extending southward of it, a westerly course will carry the vessel to the shore fringing reef, which may then be followed at 3 cables distance to Sawákin. The course given (W. by N. ¼ N.) from Two Islet reef will lead to the northward of, but not far from the two 3¼ fathom heads above mentioned. This southern channel appears some-

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what intricate, and the mariner must bear in mind, that when approaching Sawákin from any direction, great caution should be exercised, as there is probability of other reefs existing not yet charted. *Variation*, 4¾° *W.*

286.—Bay of Bengal.—*Madras.—Light on the Madras Pier.*—A *red* light will be exhibited on the end of the Madras pier on or about the 1st day of September, 1884. The light will face the entrance of the harbour about E.S.E., and will be visible at a distance of about three miles. Full particulars will be notified hereafter.

287.—Bay of Bengal.—*East Coast.—Akyab (Arracan) Approach.—Buoy Marking Oyster Reef.*—With reference to Notice 222, p. 616, on the destruction of Oyster reef lighthouse, in the approach to Akyab, by a cyclone on the 17th May, 1884,—a buoy has been placed to mark Oyster reef. The buoy is conical, red, surmounted by a spire basket, and is moored in 8 fathoms water, about three-quarters of a mile south of the reef. The buoy is reported to be visible in clear weather from a distance of 4¼ miles. *Variation*, 3° *E.*

288.—Eastern Archipelago.—*Sunda Strait.—Telegraph Cable from Nieuw Anjer (Merak) to Kalianda.*—A telegraph cable has been laid in Sunda strait, from Nieuw Anjer (Merak) in Java, to Kalianda, on the eastern shore of Lampong bay, Sumatra :—From the beacon with triangle on the shore at Nieuw Anjer, the cable takes a direction N. 42° W., passing about one mile northward of Merak island, where it is marked by two buoys ; from the western buoy, the cable is laid to pass one mile southward of Thwart-way island, and one mile S.W. of Hog point to a position S. 71° E., distant 1¼ mile from the south-eastern of the Tiga islands. Thence it takes a northerly direction, and is marked by two buoys, situated respectively N. 51° E., distant 1¼ mile, and N. 14° E., distant four miles from the south-eastern Tiga island ; from the northernmost of the two last-mentioned buoys, the cable takes a N.E. by E. and E.N.E. direction to the beacon with triangle and the cable-house at Kalianda ; the buoys and beacons marking the telegraph cable are painted white ; the buoys have the word "Kabel" on them, and are surmounted by an iron flag (Dutch colours) on which is the word "Telegraaf."

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*Caution.*—Vessels are prohibited from anchoring near the cable, but should such a necessity arise, the anchor is to be weighed as soon as practicable, without making sail. In the event of hooking the cable, it must be carefully cleared and allowed to sink. *Variation*, 2° *E.*

289.—JAPAN.—*Sikok.*—*South Coast.*—*Light on Riudsu-Saki.*—A light is exhibited from a lighthouse on Riudsu-Saki, south point of entrance to Wurato (Urado) harbour, south coast of Sikok island:—It is a *fixed white* light, visible between the bearings S. 36° E., through south, west and north, to N. 31° E., except where obscured by the land between S. 24° W. and S. 29° W.; elevated 102 feet above high water, and should be seen from a distance of 10 miles. The lighthouse, 81 feet high, is a six sided wooden structure, painted white. Position, lat. 33° 30′ N., long. 133° 36′ E.

290.—JAPAN.—*Kiusiu.*—*Hakosaki-no-Ura.*—*Light at Fukuoka* (*Hakata*).—A light is exhibited from a lighthouse erected at Fukuoka (Hakata), Hakosaki bay, N.W. coast of Kiusiu island. It is a *fixed white* light, visible through an arc of 180°, or between the bearings N. 37° E., through east and south to S. 37° W.; elevated 40 feet above high water, and should be seen from a distance of 10 miles. The lighthouse, 36 feet high, is a hexagonal wooden structure painted white, and is situated 175 yards N.E. of the former lighthouse at the mouth of Nakagawa river. Position, lat. 33° 36′ 30″ N., long. 130° 24′ E. *Variation*, 4° W.

291.—AUSTRALIA.—*Moreton Bay.*—*Brisbane River.*—(1.) *Brisbane Bar.*—*Light-Vessel Withdrawn.*—*Light and Tidal Signals Exhibited from Pile Lighthouse.*—On 31st May, 1884, the light-vessel was withdrawn from the bar of Brisbane river, and the light and the tidal signals are now shown from the Pile lighthouse:—The light is *occulting* during flood tide, and *fixed* during the ebb. The occulting light will be obscured for *two seconds* at intervals of *ten seconds*. It is elevated 44 feet above high water, and is visible from a distance of 12 miles. It will be seen as a *red* light by vessels passing through the outer cutting or between the bearings of N. by W. ½ W., through north and east to S. by E. ½ E.; *white* between S. by E. ½ E. and W.S.W. westerly; *red*

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between W.S.W. westerly and W. by N. ½ N. northerly; *white* between W. by N. ½ N. northerly, and N.W. by W. ¾ W.; between the bearings of N.W. by W. ¾ W. and N. by W. ½ W. the light will be obscured. In the direction of Cowan Cowan point, the light will be intensified through an arc of 10°. The *red* sector facing to the eastward covers Mud island and the reefs, also the shoal ground to the northward, so that when passing in the *white* sectors, north or south of the island, vessels will be in deep water. While within the *white* sector southward of the *red* sector, vessels will be in the fairway between St. Helena and Mud islands, and clear of foul ground on either hand. The lighthouse is hexagonal, on iron piles, painted stone colour, 73 feet high, and stands in 16 feet at low water, 450 feet eastward from the line of leading lights through the outer cutting. Position, lat. 27° 19′ 5″ S., long. 153° 11′ 35″ E.

*Directions.*—Vessels entering the river are to bring the leading lighthouses in line for crossing the bar, before reaching the Pile lighthouse; and vessels outward bound are not to leave that line until the Pile lighthouse is passed.

Tidal Signals.—The tidal signals by day will be made from the W.N.W. and E.S.E. corners of the lighthouse, and at night by lights shown from similar positions, the code used being as follows:

| Day Signals. | Depth in Cutting. | Night Signals. |
|---|---|---|
| Flag East ... ... ... | 14 feet | White East. |
| Flag West ... ... .. | 14½ ,, | White West. |
| Ball East ... .. ... | 15 ,, | Red East. |
| Ball West ... ... .. | 15½ ,, | Red West. |
| Cone East ... ... ... | 16 ,, | Green East |
| Cone West ... ... ... | 16½ ,, | Green West. |
| Inverted Cone East ... ... | 17 ,, | White East, Red West. |
| Inverted Cone West ... | 17½ ,, | White West, Red East |
| Ball East, Cone West ... | 18 ,, | Red East, Green West. |
| Ball West, Cone East ... | 18½ ,, | Red West, Green East. |
| Ball East, inverted Cone West | 19 ,, | Green East, White West. |
| Ball West, inverted Cone East | 19½ ,, | Green West, White East. |

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| Day Signals. | Depth in Cutting. | Night Signals. |
|---|---|---|
| Cone East, inverted Cone West | 20 feet | White East, White West. |
| Cone West, inverted Cone East | 20½ ,, | Red East, Red West. |
| Cone East, Cone West ... | 21 ,, | Green East, Green West. |
| Inverted Cone East, inverted Cone West ... ... | 21½ ,, | Two White vertical, West. |
| Ball East, Ball West ... | 22 ,, | White over Red, West. |
| Flag East, Flag West ... | 22½ ,, | White over Green, West. |

The depths given represent the draught at which a vessel may safely enter the river. During flood tide, a red flag will be kept flying from a staff on the lantern platform.

(2.) *Alteration in Position of Leading Beacons and Lights for the Inner Bar.*—The beacons with leading lights for the inner bar, situated on East bank, have been moved to the north-westward, and when in line bear N. 19¾° E. Two beacons have been erected on the shore a little above Uniacke or Luggage point, which, when in line lead through Pelican bank cutting. *Variation*, 8¾° *E.*

292.—Australia.—*South Coast.—Light Exhibited at Cape Nelson.*—With reference to Notice in 1883, on 7th July, 1884, a light would be exhibited from a lighthouse erected on Cape Nelson :—The light is *fixed white*, between the bearings E. ¼ S., through east, north, and west, to W. ½ S., elevated 250 feet above the sea, and visible from a distance of 19 miles. A *red* sector is shown to the eastward over Lawrence rock, between the bearings W. ¼ S. and W.S.W. ; and a *red* sector is also shown to the westward over the southernmost point of Cape Bridgewater, and one mile seaward of that point, or between the bearings E. ¼ S. and E. by S. The lighthouse, 79 feet high, is constructed of stone and painted white. Position approximate, lat. 38° 25′ 45″ S., long. 141° 32′ 55″ E.

293.—South Australia.—*Investigator Strait.—Kangaroo Island, Nepean Bay.—Bell Buoy.*—The cheese-shaped buoy in lat. 35° 41′ 30″ S. and long. 137° 42′ 35″ E., for the purpose of indicating the line of telegraph cable from Yankalilla to Kingscote, has been replaced by a bell buoy constructed of iron, painted red, surmounted by pyramidal framework and ball, and marked with the letter T on each side of the frame.

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294.—South Australia.—*Investigator Strait.—Kangaroo Island, Nepean Bay.—New Buoy.*—A tub-shaped buoy, surmounted by open pyramidal framework and ball, painted red, has been moored off the end of the Sandspit leading into Kingscote harbour in 3½ fathoms at low water. The buoy is in lat. 35° 40′ 40″ S., and long. 137° 41′ E., approximately. Vessels anchoring to the southward of this buoy will be clear of the telegraph cable.

295.—South Australia.—*S.W. Coast.—Waterloo Bay.—Mooring Buoys.*—Moorings for 4 vessels are now laid down in Waterloo bay, the outer ones (two moorings) are in 27 feet at low water, and the inner ones (two moorings) in 11 feet at low water. The soundings are very uneven after passing the reefs at the entrance, and shoal patches of 12 and 13 feet exist at low water, with rocky bottom all over the bay. Lat. 33° 39′ 20″ S., long. 134° 52′ 30″ E.

296.—South Pacific Ocean.—*Sandbank.*—The master of the *Cambrian Princess*, on a voyage from Cooktown to Port Adelaide, has reported the existence, in lat. 15° 44′ S. and long. 149° 52′ E., of a sandbank, about three miles in length, and apparently six feet out of water; no outlying reefs or discoloured water was visible from the masthead.

297.—South America.—*Magellan Strait.—Broad Reach.—Sandy Point.—Alteration in Position of Low (Red) Leading Light.*—On the 15th June, 1884, the low or red leading light at Sandy point would be shifted eastward of its previous position—so that, the direction of the two lights in line will lead about a quarter of a mile eastward of the wreck of H.M.S. *Doterel*, to a clear berth.

298.—South America.—*S.E. Coast.—Staten Island.—Light on Cape St. John.*—On the 25th May, 1884, a light was exhibited from a lighthouse erected on Cape St. John, the N.E. point of Staten island. It is a *fixed white* light, and visible from a distance of 10 miles. Position approximate, lat. 54° 42¼′ S., long. 68° 48¾′ W.

299.—West Indies.—*New Granada.—Savanilla Harbour.—Character of Light.*—Information concerning the character of the light exhibited near Cupino beach, Savanilla harbour. The light shows *fixed white* for a period of *thirty-five seconds*, eclipse *nine seconds*, flash *three seconds*, followed by an eclipse of *nine seconds*;

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the flash should be visible from a distance of 15 miles, the fixed light not so far.

300.—UNITED STATES.—*Florida.—Light on Sanibel Island.*—On and after August 20, 1884, a *fixed white* light varied by *white flashes* at intervals of *two minutes*, will be shown from the light-house recently erected at the eastern end of Sanibel island, near the entrance to San Carlos harbour, and to the port of Punta Rasa, Florida. The apparatus lights the entire horizon; elevation, 98 feet above mean sea level, and visible 16 miles. The structure is a black pyramidal framework of iron, surmounted by a black lantern. Two keepers' dwellings, painted white, are situated near by. The approximate position of the lighthouse is lat. 26° 27′ 7″ N., long. 82° 1′ 3″ W.

301.—UNITED STATES.—*Georgia.—Bell Buoys.—St. Simon's Sound and Doboy Inlet.*—On or about August 1, 1884, a bell buoy will be moored in the place of red buoy, No. 4, to mark the middle north breaker, St. Simon's sound, Georgia. Also, on or about the same date, a bell buoy will be moored in the place of black buoy, No. 3, off the knuckle which marks the turn in the main channel into Doboy inlet, Georgia. These buoys will be rung by the action of the sea.

302.—UNITED STATES.—*Delaware River Entrance.—Cape Henlopen.—Dangerous Condition of Beacon Lighthouse.*—Owing to the encroachment of the sea, the beacon (or northern) lighthouse on cape Henlopen, south side of Delaware river entrance, stands about 25 yards outside the high water line, and is consequently in imminent danger of being washed away.

*Note.*—Should mariners, when approaching the river entrance, be unable to see the beacon light, they should not attempt to enter unless with a pilot on board, or should at least, when nearing the cape, keep northward of the breakwater range lights in line.

*Lewes.—Life-saving Station.*—A life-saving station has recently been erected about 25 yards within the beach, and about 500 yards eastward of the railway pier at Lewes, westward of cape Henlopen.

*Caution.*—It is intended to immediately begin filling in the channel between the eastern end of the ice-breaker and the

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western extremity of the breakwater, on the south side of Delaware river entrance, by sinking "mattresses" of brush and branches preparatory to closing the opening by a continuous wall of stone. Mariners should not use this passage, as it will become more shallow day by day, and an attempt to pass through would be dangerous.

303.—UNITED STATES.—*Maine.—Establishment of Fog-Signal at Libby Island, Entrance to Machias Bay.*—On and after August 15, 1884, there will be established at Libby island light-station, entrance to Machias bay, Maine, a Daboll fog-trumpet, which, in thick and foggy weather, will be sounded by giving *blasts of seven seconds' duration at intervals of forty seconds.* If the trumpet be disabled, a bell will be struck by machinery one blow every ten seconds.

304.—NOVA SCOTIA.—*Bay of Fundy.—Light Exhibited at Advocate Harbour.* — On 1st August, 1884, a light would be exhibited from a tower situated on the N.W. side of entrance to Advocate harbour, Bay of Fundy. It is *fixed red*, elevated 86 feet above high water, and visible all around the horizon from a distance of 7 miles. The lighthouse is a square wooden tower, 27 feet high, painted white. Position, lat. 45° 19′ 25″ N., long. 64° 47′ 30″ W.

305.—NOVA SCOTIA.—*S.E. Coast.—Lunenburg Harbour.—Alteration in the Character of Battery Point Light.*—On 1st August, 1884, the character of Battery point light, Lunenburg harbour, S.E. coast of Nova Scotia would be changed to a *fixed red* light.

306.—NEW BRUNSWICK.—*Gulf of St. Lawrence.—Miramichi River—Light Exhibited near Newcastle.*—On 1st July, 1884, a light was exhibited from a lighthouse erected on the Limekiln bank, on the north shore of Miramichi river, below the town of Newcastle :—The light is *fixed red*, elevated 87 feet above high water, and visible from a distance of 9 miles. The lighthouse is a square wooden tower, 23 feet high, painted white with a red roof. Position, lat. 47° 0′ 45″ N., long. 65° 33′ 40″ W.

307.—CANADA.—*Gulf of St. Lawrence.—Chaleur Bay.—Light on Little Belledune Point.*—On 10th June, 1884, a light would be exhibited from a mast on Little Belledune point, southern shore of

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Chaleur bay:—It is a *fixed white* light, elevated 38 feet above high water, and visible from a distance of 11 miles. The mast, 28 feet high, has a white shed at its base. Position, lat. 47° 55′ 20″ N., long. 65° 53′ 20″ W.

808.—CANADA.—*Gulf of St. Lawrence.—Ristigouche River.—Light-Vessel off Garde Point.*—A light will continue to be exhibited from the small light-vessel (irregularly maintained since 1879) off Garde point, Ristigouche river:—It is a *fixed white* light, elevated 20 feet above the water, and visible up and down stream, from a distance of about 3 miles. The light is to enable vessels to avoid the spit. The vessel, painted black with white spars, is anchored in 7 feet water on a spit on the south side of the main channel. Position, lat. 48° 3′ 10″ N., long. 66° 32′ 10″ W.

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INDIAN OCEAN.—*North Part.—Lighthouse on the Island of Minicoy.*—The lighthouse which has been for some time past in course of erection on the island of Minicoy, off the S.W. coast of India, being now nearly completed, it is intended to exhibit the light therefrom early in the month of January, 1885. The top of the tower, which is built of black brick, and the lantern, will be visible by day above the trees. On the bearing of N.E. ½ N. from the lighthouse the light will be obscured by cocoanut trees within a distance of about 8 miles. This obscuration will extend in an easterly direction for 74 degrees to the bearing of E.S.E., where the distance obscured will decrease to about 1¼ mile. The light will be *white, revolving every half-minute*, showing all around the horizon at an elevation of 150 feet above high water, and visible from a distance of about 19 miles. Further notice will be issued when the above has been effected.

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## OUR OFFICIAL LOG.

### REVISED REGULATIONS FOR PREVENTING COLLISIONS AT SEA, ISSUED IN PURSUANCE OF THE MERCHANT SHIPPING ACT, AMENDMENT ACT, 1862.

Art. 1. In the following rules every steamship which is under sail and not under steam is to be considered a sailing ship; and every steamship which is under steam, whether under sail or not, is to be considered a ship under steam.

*Rules concerning Lights.*

Art. 2. The lights mentioned in the following Articles, numbered 3, 4, 5, 6, 7, 8, 9, 10 and 11, and no others, shall be carried in all weathers, from sunset to sunrise.

Art. 3. A sea-going steamship when under way shall carry—

(*a.*) On or in front of the foremast, at a height above the hull of not less than 20 feet, and if the breadth of the ship exceeds 20 feet, then at a height above the hull not less than such breadth, a bright white light, so constructed as to show an uniform and unbroken light over an arc of the horizon of 20 points of the compass, so fixed as to throw the light 10 points on each side of the ship, viz., from right ahead to two points abaft the beam on either side, and of such a character as to be visible on a dark night, with a clear atmosphere, at a distance of at least 5 miles.

(*b.*) On the starboard-side a green light, so constructed as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to 2 points abaft the beam on the starboard-side, and of such a character as to be visible on a dark night, with a clear atmosphere, at a distance of at least 2 miles.

(*c.*) On the port-side a red light, so constructed as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light

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from right ahead to 2 points abaft the beam on the port-side, and of such a character as to be visible on a dark night, with a clear atmosphere, at a distance of at least 2 miles.

(*d.*) The said green and red side-lights shall be fitted with inboard screens projecting at least 3 feet forward from the light, so as to prevent these lights from being seen across the bow.

Art. 4. A steamship, when towing another ship, shall, in addition to her side-lights, carry two bright white lights in a vertical line one over the other, not less than 3 feet apart, so as to distinguish her from other steamships. Each of these lights shall be of the same construction and character, and shall be carried in the same position, as the white light which other steamships are required to carry.

Art. 5 (*a.*) A ship, whether a steamship or a sailing ship, which from any accident is not under command, shall at night carry, in the same position as the white light which steamships are required to carry, and, if a steamship, in place of that light, three red lights in globular lanterns, each not less than 10 inches in diameter, in a vertical line one over the other, not less than 3 feet apart, and of such a character as to be visible on a dark night with a clear atmosphere at a distance of at least 2 miles; and shall by day carry in a vertical line one over the other, not less than 3 feet apart, in front of but not lower than her foremast head, 3 black balls or shapes, each 2 feet in diameter.

(*b.*) A ship, whether a steamship or a sailing ship employed in laying or in picking up a telegraph cable, shall at night carry in the same position as the white light which steamships are required to carry, and, if a steamship, in place of that light, three lights in globular lanterns each not less than 10 inches in diameter, in a vertical line over one another, not less than 6 feet apart; the highest and lowest of these lights shall be red, and the middle light shall be white, and they shall be of such a character that the red lights shall be visible at the same distance as the white light. By day she shall carry in a vertical line one over the other not less than 6 feet apart, in front of but not lower than her foremast head,



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three shapes not less than 2 feet in diameter, of which the top and bottom shall be globular in shape and red in colour, and the middle one diamond in shape and white.

(*c.*) The ships referred to in this Article, when not making any way through the water, shall not carry the side-lights, but when making way shall carry them.

(*d.*) The lights and shapes required to be shown by this Article are to be taken by other ships as signals that the ship showing them is not under command, and cannot therefore get out of the way. The signals to be made by ships in distress and requiring assistance are contained in Article 27.

Art. 6. A sailing ship under way, or being towed, shall carry the same lights as are provided by Article 3 for a steamship under way, with the exception of the white light, which she shall never carry.

Art. 7. Whenever, as in the case of small vessels during bad weather, the green and red side-lights cannot be fixed, these lights shall be kept on deck, on their respective sides of the vessel, ready for use; and shall, on the approach of or to other vessels, be exhibited on their respective sides in sufficient time to prevent collision, in such manner as to make them most visible, and so that the green light shall not be seen on the port-side nor the red light on the starboard-side.

To make the use of these portable lights more certain and easy, the lanterns containing them shall each be painted outside with the colour of the light they respectively contain, and shall be provided with proper screens.

Art. 8. A ship, whether a steamship or a sailing ship, when at anchor, shall carry, where it can best be seen, but at a height not exceeding 20 feet above the hull, a white light, in a globular lantern of not less than 8 inches in diameter, and so constructed as to show a clear uniform and unbroken light visible all round the horizon, at a distant of at least one mile.

Art. 9. A pilot vessel, when engaged on her station on pilotage duty, shall not carry the lights required for other vessels, but shall carry a white light at the masthead, visible all round the horizon, and shall also exhibit a flare-up light or flare-up lights at short intervals, which shall never exceed fifteen minutes.

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A pilot vessel, when not engaged on her station on pilotage duty shall carry lights similar to those of other ships.

Art. 10. Open boats and fishing vessels of less than 20 tons net registered tonnage, when under way and when not having their nets, trawls, dredges, or lines in the water, shall not be obliged to carry the coloured side-lights; but every such boat and vessel shall in lieu thereof have ready at hand a lantern with a green glass on the one side and a red glass on the other side, and on approaching to or being approached by another vessel such lantern shall be exhibited in sufficient time to prevent collision, so that the green light shall not be seen on the port-side nor the red light on the starboard-side.

The following portion of this Article applies only to fishing vessels and boats when in the sea off the coast of Europe lying north of Cape Finisterre :—

(*a.*) All fishing vessels and fishing boats of 20 tons net registered tonnage or upwards, when under way, and when not required by the following Regulations in this Article to carry and show the lights therein named, shall carry and show the same lights as other vessels under way.

(*b.*) All vessels when engaged in fishing with drift nets shall exhibit two white lights from any part of the vessel where they can be best seen. Such lights shall be placed so that the vertical distance between them shall not be less than 6 feet and not more than 10 feet; and so that the horizontal distance between them measured in a line with the keel of the vessel shall be not less than 5 feet and not more than 10 feet. The lower of these two lights shall be the more forward, and both of them shall be of such a character, and contained in lanterns of such construction as to show all round the horizon, on a dark night with a clear atmosphere, for a distance of not less than three miles.

(*c.*) A vessel employed in line fishing with her lines out shall carry the same lights as a vessel when engaged when fishing with drift nets.

(*d.*) If a vessel when fishing becomes stationary in consequence

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of her gear getting fast to a rock or other obstruction, she shall show the light and make the fog-signal for a vessel at anchor.

(*e.*) Fishing vessels and open boats may at any time use a flare-up in addition to the lights which they are by this Article required to carry and show. All flare-up lights exhibited by a vessel when trawling, dredging, or fishing with any kind of drag net shall be shown at the after-part of the vessel, excepting that, if the vessel is hanging by the stern to her trawl, dredge or drag net, they shall be exhibited from the bow.

(*f.*) Every fishing vessel and every open boat when at anchor between sunset and sunrise shall exhibit a white light visible all round the horizon at a distance of at least one mile.

(*g.*) In fog, mist, or falling snow, a drift-net vessel attached to her nets, and a vessel when trawling, dredging, or fishing with any kind of drag net, and a vessel employed in line fishing with her lines out, shall at intervals of not more than two minutes make a blast with her fog-horn and ring her bell alternately.

Art. 11. A ship which is being overtaken by another shall show from her stern to such last-mentioned ship a white light or a flare-up light.

*Sound Signals for Fog, &c.*

Art. 12. A steamship shall be provided with a steam-whistle or other efficient steam sound-signal, so placed that the sound may not be intercepted by any obstructions, and with an efficient fog-horn to be sounded by a bellows or other mechanical means, and also with an efficient bell.* A sailing ship shall be provided with a similar fog-horn and bell.

In fog, mist, or falling snow, whether by day or night, the signals described in this Article shall be used as follows; that is to say :—

(*a.*) A steamship under way shall make with her steam-

* In all cases where the Regulations require a bell to be used, a drum will be substituted on board Turkish vessels.

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whistle, or other steam sound-signal, at intervals of not more than two minutes, a prolonged blast.

(*b.*) A sailing ship under way shall make with her fog-horn, at intervals of not more than two minutes, when on the starboard-tack one blast, when on the port-tack two blasts in succession, and when with the wind abaft the beam three blasts in succession.

(*c.*) A steamship and a sailing ship, when not under way, shall at intervals of not more than two minutes ring the bell.

*Speed of Ships to be moderate in Fog, &c.*

Art. 13. Every ship, whether a sailing ship or steamship, shall in a fog, mist, or falling snow, go at a moderate speed.

*Steering and Sailing Rules.*

Art. 14. When two sailing ships are approaching one another, so as to involve risk of collision, one of them shall keep out of the way of the other, as follows, viz. :—

(*a.*) A ship which is running free shall keep out of the way of a ship which is close-hauled.

(*b.*) A ship which is close-hauled on the port-tack shall keep out of the way of a ship which is close-hauled on the starboard-tack.

(*c.*) When both are running free with the wind on different sides, the ship which has the wind on the port-side shall keep out of the way of the other.

(*d.*) When both are running free with the wind on the same side, the ship which is to windward shall keep out of the way of the ship which is to leeward.

(*e.*) A ship which has the wind aft shall keep out of the way of the other ship.

Art. 15. If two ships under steam are meeting end-on or nearly end-on, so as to involve risk of collision, each shall alter her course to starboard, so that each may pass on the port-side of the other.

This Article only applies to cases where ships are meeting end-on or nearly end-on, in such a manner as to involve risk of collision, and does not apply to two ships which must, if both kept on their respective courses pass clear of each other.

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The only cases to which it does apply are, when each of the two ships is end-on or nearly end-on to the other; in other words, to cases in which, by day, each ship sees the masts of the other in a line, or nearly in a line, with her own; and by night, to cases in which each ship is in such a position as to see both the side-lights of the other.

It does not apply by day to cases in which a ship sees another ahead crossing her own course; or by night to cases where the red light of one ship is opposed to the red light of the other, or where the green light of one ship is opposed to the green light of the other, or where a red light without a green light, or a green light without a red light, is seen ahead, or where both green and red lights are seen anywhere but ahead.

Art. 16. If two ships under steam are crossing, so as to involve risk of collision, the ship which has the other on her own starboard-side shall keep out of the way of the other.

Art. 17. If two ships, one of which is a sailing ship and the other a steamship, are proceeding in such directions as to involve risk of collision, the steamship shall keep out of the way of the sailing ship.*

Art. 18. Every steamship, when approaching another ship, so as to involve risk of collision, shall slacken her speed or stop and reverse, if necessary.

Art. 19. In taking any course authorised or required by these Regulations, a steamship under way may indicate that course to any other ship which she has in sight by the following signals on her steam-whistle, viz. :—

One short blast to mean "I am directing my course to starboard."

Two short blasts to mean "I am directing my course to port."

Three short blasts to mean "I am going full speed astern."

* The following rule is applicable in the River Thames:—"If a sailing "vessel and a steam-vessel are proceeding in such a direction as to involve "risk of collision, the steam-vessel shall keep out of the way of the "sailing vessel: provided, however, that if owing to causes beyond the "control of those navigating the steam-vessel, it is unsafe or impracticable "for the steam-vessel to keep out of the way of the sailing vessel, the "steam-vessel shall signify the same to the sailing vessel by four or more "blasts of the steam-whistle of about two seconds' duration in rapid "succession; and the sailing vessel shall then keep out of the way of the "steam-vessel."

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The use of these signals is optional, but if they are used the course of the ship must be in accordance with the signal made.

Art. 20. Notwithstanding anything contained in any preceding Article, every ship, whether a sailing ship or a steamship, overtaking any other shall keep out of the way of the overtaken ship.

Art. 21. In narrow channels every steamship shall, when it is safe and practicable, keep to that side of the fairway or mid-channel which lies on the starboard-side of such ship.

Art. 22. Where by the above Rules one of two ships is to keep out of the way, the other shall keep her course.

Art. 23. In obeying and construing these Rules due regard shall be had to all dangers of navigation; and to any special circumstances which may render a departure from the above Rules necessary in order to avoid immediate danger.

*No Ship, under any circumstances, to neglect Proper Precautions.*

Art. 24. Nothing in these Rules shall exonerate any ship, or the owner, or the master, or crew thereof, from the consequences of any neglect to carry lights or signals, or of any neglect to keep a proper look-out, or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

*Reservation of Rules for Harbours and Inland Navigation.*

Art. 25. Nothing in these Rules shall interfere with the operation of a special rule, duly made by local authority, relative to the navigation of any harbour, river, or inland navigation.

*Special Lights for Squadrons and Convoys.*

Art. 26. Nothing in these Rules shall interfere with the operations of any special rules made by the Government of any nation with respect to additional station and signal lights for two or more ships of war or for ships sailing under convoy.

*Distress Signals.*

Art. 27. When a ship is in distress and requires assistance from other ships or from the shore, the following shall be the signals to be used or displayed by her, either together or separately, that is to say:

In the daytime—

1. A gun fired at intervals of about a minute;

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2. The International Code Signal of distress indicated by N C;
3. The distant signal, consisting of a square flag, having either above or below it a ball, or anything resembling a ball.

At night—

1. A gun fired at intervals of about a minute;
2. Flames on the ship (as from a burning tar barrel, oil barrel, &c.);
3. Rockets or shells, throwing stars of any colour or description, fired one at a time, at short intervals.

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## Official Inquiries at Home, 1884.

2236. *Asiana*, ship; built at St. John's, New Brunswick, 1864; owned by Messrs. D. V. and G. Roberts and others; tonnage, 1,114; New Orleans to Liverpool; cotton; stranded on the south-west reef, Bermuda Island, February 28, 1884. Inquiry held at Liverpool, July 17, 1884, before Mansfield, Judge; Hight and Curling, N.A. Casualty caused by master misjudging his distance from the land. Certificate not dealt with.

2241. *Solway Queen*, s.s.; built at Preston, 1883; owned by The Solway Screw Shipping Company, Limited; tonnage, 149; Neath to Belfast; coal and two passengers; stranded on Skokham Island, June 26, 1884. Inquiry held at Belfast, July 21, 1884, before MacCarthy, Judge; Wilson and Hyde, N.A. Casualty due to fog and neglect of the lead. Certificate not dealt with.

2242. *Linhope*, s.s.; built at West Hartlepool, 1878; owned by Mr. R. Chapman; tonnage, 1,509; Newcastle to Port Said; coal; foundered after passing Ushant, June 2, 1884. Three lives lost. Inquiry held at Newcastle, July 18, 1884, before Rothery, Wreck Commissioner; Methven, Pickard and Comyn, N.A. Vessel overladen, unstable as laden, and undermanned, for which owner and master are to blame.

2243. *Superior*, fishing smack; built at Sandwich, 1858; owned by Mr. A. Adams; tonnage, 38; Lowestoft to fishing ground North Sea; foundered about 40 miles N.E. of Leman and Ower Lightship. Inquiry held at Lowestoft, July 19, 1884, before Rothery, Wreck Commissioner; Murdock and Anderson, N.A. Vessel unseaworthy on sailing, for which owner is responsible for having

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sent her. Master also responsible for taking her to sea in that state. Certificate of latter suspended for twelve months.

2244. *Ilva*, barque; built at Pallian, Durham, 1865; owned by Mr. W. Cook and others; tonnage, 313; Liverpool to Pernambuco; coal; lost off Kirkcudbrightshire, between February 1 and 12, 1884. Inquiry held at Liverpool, July 24, 1884, before Mansfield, Judge; Harland and Kiddle, N.A. Vessel seaworthy. No evidence as to cause of loss, but vessel encountered a severe gale immediately after leaving port.

2245. *Sarnia*, s.s.; built at Whiteinch, near Glasgow, 1882; owned by Mississippi and Dominion Steamship Company; tonnage, 2,421 gross; Quebec to Liverpool; general cargo and 67 passengers; stranded near Rue Point, Rathlin Island, July 7, 1884. Inquiry held at Liverpool, July 26, 1884, before Mansfield, Judge; Comyn and Harland, N.A. Casualty due to fog, which suddenly set in, and to vessel not being navigated with proper and seamanlike care. Master recommended to be more careful in future.

2247. *Baines Hawkins*, s.s.; built at Blyth, 1881; owned by Messrs. Fisher, Kenwick, and Company; tonnage, 480; Cardiff to Antwerp; coal; stranded on Lundy Island, June 27, 1884. Inquiry held at Swansea, July 29, 1884, before Fowler, Judge; Castle and Vaux, N.A. Stranding due to fog, to ship not making courses set and steered, and to the fog-signal on Lundy Island not having been heard. Master not in default.

2248. *Wimbledon*, s.s.; built at Stockton-on-Tees, 1873; owned by Mr. F. W. Harris and others; tonnage, 957; Penarth to Madeira; coal and one passenger; stranded on Lundy Island, June 27, 1884. Inquiry held at Swansea, July 29, 1884, before Fowler, Judge; Castle and Vaux, N.A. Stranding due to fog, and to ship not making the courses set and steered. Master and mate censured for proceeding to sea without the patent log.

2250. *Cæsarea*, s.s., and *Strathesk*, s.s.; former built at Glasgow, 1867; owned by London and South-Western Railway Company; tonnage, 250; Southampton to St. Malo; general cargo and eleven passengers; latter built at Bowling, Dumbarton, 1881; owned by Mr. A. M. Hay and others; tonnage, 93; Jersey to Littlehampton; potatoes and three or four passengers; in collision off Cape La

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Hague, June 27, 1884, when former vessel foundered and one life was lost. Inquiry held at Westminster, July 25, 1884, before Rothery, Wreck Commissioner; Beasley, Ronaldson and Moresby, N.A. Casualty due to fog, and to masters not having reversed full speed on first hearing each other's whistle. Certificates not dealt with.

2251. *Ann*, fishing boat, and *Matthew Cay*, s.s.; former owned by Mr. J. Crawford and others; tonnage, 8; engaged fishing; latter built at South Shields, 1878; owned by Mr. M. Cay and others; tonnage, 869; Sligo to the Tyne; ballast; in collision near Newbiggin Point, June 18, 1884, when one life was lost. Inquiry held at Westminster, July 26, 1884, before Rothery, Wreck Commissioner; Parish, Powell and Ronaldson, N.A. Second mate of the *Matthew Cay* to blame. Certificate as first mate suspended for six months. Recommended for one as second mate.

2256. *Girvan*, barque; built at Govan, 1869; owned by Mr. D. Hunter; tonnage, 694; Glasgow to Adelaide; general cargo; stranded on Clachen Rock, Rathlin Island, July 5, 1884. Inquiry held at Glasgow, July 30, 1884, before Allan and Muir, Justices; Ward and Davies, N.A. Casualty attributable to the careless navigation or want of knowledge of the pilot.

2257. *Constance*; built at Newhaven, 1858; owned by Mr. J. Bambrough; tonnage, 867; Jamaica to Goole; logwood roots; abandoned off the coast of Jamaica, May 9, 1884. Inquiry held at Westminster, July 30, 1884, before Rothery, Wreck Commissioner; Hight and Parfitt, N.A. Loss due to vessel having become full of water, but how the water got into her, whether by a sudden leak, or by her unseaworthy condition, or by the act of any one on board, there was nothing to show.

2258. *Searcher*, smack; left Hull for a fishing voyage in the North Sea, with women and children for Grimsby; stranded abreast of Grimsby and was again allowed to take the ground at the following low water, the master twice going on shore, and remaining a considerable time. Inquiry held by the Hull Local Marine Board, July 31, 1884. Master's conduct not justifiable. Certificate suspended for three months.

2262. *Yeddo*, s.s.; built at Hull, 1871; owned by Messrs. T. Wilson, Sons, and Company; tonnage, 1,470; Cronstadt to

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London; grain, wood, and one passenger; stranded on Hammergrundet Reef, four miles from South Oland Lighthouse, June 1, 1884. Inquiry held at Hull, August 7, 1884, before Twiss, Judge; Anderson and Kennedy, N.A. Master in default for setting an improper course, and for neglecting to obtain latest charts and sailing directions. Certificate suspended for six months.

2263. *James Kenway*, barque; built at St. John's, N.B., 1873; owned by Mr. J. Ritchie, Junr.; tonnage, 586; Liverpool to Miramichi; ballast; stranded near Port Elven, Islay, N.B., July 15, 1884. Inquiry held at Liverpool, August 9, 1884, before Mansfield, Judge; Curling and Pattison, N.A. Casualty due to vessel being kept too long on a northerly course and to the neglect of the lead. Certificate not dealt with.

2264. *Catherine and Alice*, brigantine; built at Nevin, Carnarvon, 1850; owned by Mr. W. Williams, her master; tonnage, 98; Middlesboro' to Totnes; coal; abandoned near St. Alban's Head, May 13, 1884; fell in with and brought into Weymouth; several holes found in the after part of the vessel. Inquiry held at Liverpool, August 7, 1884, before Mansfield, Judge; Curling and Pattison, N.A. Considered holes in vessel were recently bored at sea, and that vessel was improperly and prematurely abandoned. Master in default.

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### Official Inquiries Abroad, 1884.

2237. *Mangana*, s.s.; grazed Norgate Rock, off Eddystone Point, April 24, 1884. Inquiry held at Melbourne, April 29, 1884. Master misjudged his distance. Cautioned.

2238. *Herald*, s.s.; foundered near the North Head of Port Jackson, April 1, 1884. Inquiry held at Sydney, April 28, 1884. Loss caused by boiler exploding.

2239. *Berlinda*, ketch; left Wogonga for Sydney, April 16, 1884, and became a total wreck in attempting to cross the bar. Inquiry held at Sydney, May 16, 1884. Casualty due to wind failing, and anchors dragging.

2240. *Adelaide*, s.s., and *Wairarapa*, s.s., in collision in the West Channel, February 20, 1884. Inquiry held at Melbourne, April 9, 1884. Master of *Adelaide*, the overtaking vessel, to blame.

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Certificate suspended for two months. Both masters severely censured for their high rate of speed.

2246. *Commander*, s.s.; stranded near Maceio, June 14, 1884. Inquiry held at Pernambuco, July 2, 1884. Master to blame for approaching too near the land, and neglecting to take proper precautions when hugging the land so closely. Certificate suspended for six months. Chief officer reprimanded for the careless manner in which he kept the log.

2249. *Archer*, s.s., and *Taldora*, s.s.; in collision in Moreton Bay, May 30, 1884. Inquiry held at Brisbane, June 19, 1884. Master of *Archer* to blame. Censured.

2252. *Brilliant*, schooner; wrecked near the Brunswick River, May 2, 1884. Inquiry held at Sydney, June 9, 1884. Casualty due to anchors dragging during a gale.

2253. *Emu*, s.s.; lost near Bellinger Bar, April 24, 1884. Inquiry held at Sydney, May 19, 1884. Casualty caused by vessel tailing on spit after anchoring inside the bar.

2254. *Laleham*, s.s.; stranded near Elephant Point, Ceylon, April 27, 1884. Inquiry held at Calcutta, May 29, 1884. Casualty due to master allowing himself too little margin while attempting to pass Ceylon. Admonished to be more careful in future.

2255. *Newark*, barque; stranded on a reef near Prince's Island, Straits of Sunda, June 1, 1884. Inquiry held at Batavia, June 23, 1884. Master to blame for leaving deck when vessel was rounding an unlighted danger and neglecting to provide himself with proper charts. Certificates suspended for three months. Mate censured.

2259. *Takapuna*, s.s.; stranded near Cape Egmont, November 23, 1883. Inquiry held at Dunedin, May 2, 1884. Master to blame for leaving deck in charge of a young officer unacquainted with the coast. Certificate suspended for six months, and ordered to pay the costs of the witnesses, amounting to £30 10s.

2260. *Kate Mellick*, barque; abandoned in about lat. 56° 42′ S. and long. 76° W., May 20, 1884. Inquiry held at Valparaiso, June 16, 1884. Abandonment justifiable.

2261. *Dawn*, s.s.; stranded on the Hog Sties, May 16, 1884. Inquiry held at Inagua, June 18, 1884. Casualty occasioned by some error of the compass together with the easterly current.

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OFFICIAL RETURN OF BRITISH WRECKS IN JULY, 1884.—The number and tonnage of British vessels, respecting whose loss reports were received at the Board of Trade during the month of July, 1884, and the number of lives lost, are as follow :—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing..... | 51 | 11,619 | 51 |
| Steam ..... | 15 | 9,141 | 12 |
| Total..... | 66 | 20,760 | 63 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in July relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—THOMAS GRAY, Assistant-Secretary, Marine Department.—Board of Trade, July, 1884.

THE Board of Trade have awarded a binocular glass to Captain Mathieu Correwyn, of the Belgian fishing vessel *Avenir*, of Antwerp, in recognition of his humanity and kindness to three of the crew of the fishing smack, *Ben Bolt*, of Hull, whom he picked up near the Doggerbank on the 10th December last, after they had been in an open boat for 26 hours without food or water.

HER Majesty's Government have awarded pieces of plate to Dr. José Balboa and Chevalier Dr. Schmidt in acknowledgment of their kindness and attention to the shipwrecked crew of the British barque, *Punjaub*, on the occasion of the stranding of that vessel at Tangier, on the 19th December, 1883.

THE Board of Trade have awarded their silver medal to Mr. Thomas Leys Henderson, second mate of the s.s. *Rydal Hall*, of Liverpool, in recognition of his gallantry in saving the life of one the crew of the barque *Moel Rhiwan*, of Carnarvon, which was in a sinking condition off the Smalls on the 12th February last. The weather was very severe, and the masters of both vessels were unwilling to lower their boats, when a seaman of the *Moel Rhiwan* attempted to swim to the *Rydal Hall*, but would have been drowned had not Mr. Henderson jumped overboard with a line around him, and rescued the man at very great risk.

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## GENERAL.

STEAM SHIPPING TRADE.—In Mr. John White's Half-yearly Steamship Circular, it is stated that the past half-year has been one of the most remarkable, unprofitable, and unpromising ever known to the British Shipowner and Shipbuilder. Orders for new steamers last year gradually decreased to the extent of 50 per cent. between the first and third quarters, and a further 50 per cent. between the third and fourth quarters, this depression has continued until, with the exception of an odd contract to replace a steamer for a special trade, or a sailing vessel here and there, and these at prices that will not recoup the cost, no orders have recently been placed. Freights generally will not repay expenses, and many owners have preferred to lay their vessels up to running them at a loss; there are at present over 200 steamers laid up. When business arrives at this stage, it may fairly be assumed everything has got to its lowest, and must stop until the natural course of trade turns the market. The trade of the country generally is bad, but over-production of tonnage is unquestionably the cause of the exceedingly low freights current. When, as is the fact, the production for English owners has doubled in 10 years, being 768,576 tons in 1883, against 370,668 tons in 1873, the present depression can only be considered a natural consequence. All our extension of commerce and greater adoption of ocean carriage cannot be expected to warrant such a supply of tonnage, especially when the effective carrying power by the substitution of steamers for sailing ships is considered, and whilst English owners have thus been so extensively adding to the carrying powers, a large production has at the same time been going on by our builders for Colonial and Foreign shipowners; which will be seen by the figures of the total tonnage built in 1883 in our yards, which were, iron steamers, 676,338 tons; steel steamers, 113,389 tons; iron and steel sailing vessels, 129,398 tons; making a total production of 919,125 tons. Another example of the rapid building that has taken place, will be seen from the years' production 25 years since on the Clyde of 35,709 tons, compared with the tonnage constructed on the same river in 1883 of 415,694 tons.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. X.

OCTOBER, 1884.

## ABSTRACTS OF SEA CASUALTIES, 1882-3; AND OTHER RECENTLY PUBLISHED STATISTICS RELATING TO MERCHANT SHIPPING.

### State of the Register at the End of 1883.

THE depression which has for some time prevailed in the shipbuilding and shipowning trades is not apparent in the Returns relating to the navigation and shipping of the United Kingdom for the year 1883. Although, as stated in the last page of the *Nautical* for September, the orders for new steamers decrease at a rapid rate through the succeeding quarters of the year, yet the work turned out during the year was far in excess of anything that had previously been accomplished. The total tonnage built in the United Kingdom during the year 1883, including tonnage built for foreigners, was 892,216 tons net, which was 109,000 tons more than that built in the previous year. Whilst the tonnage built in the last three years was 105,600 tons more than that built in the previous five years. The average annual increase in the *steam* tonnage on the Register of the United Kingdom during the ten years ended 1882 was 179,582 tons net; but in 1883, the increase was 393,334 tons net. The average annual increase in the *total* tonnage on the Register of the United Kingdom during the ten years was 122,668 tons net, but in the year 1883 it was 287,751 tons net.



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It is, however, impossible to realize adequately the enormous increase in the capacity of the Mercantile Marine of this country without taking into account the superior value and carrying power of a steam ton as compared with a sailing ton. Assuming that a steam ton is equal in carrying power to four sailing tons, an estimate which is now generally adopted, it follows that the carrying power of the Mercantile Marine of the United Kingdom was in sailing tons:—

| | | | | |
|---|---|---|---|---|
| 1872 | ... | ... | ... | 10,290,188 net tons. |
| 1882 | ... | ... | ... | 16,904,335 ,, ,, |
| 1883 | ... | ... | ... | 18,372,088 ,, ,, |

The greater efficiency of steam tonnage is also shown by the entries and clearances at ports in the United Kingdom, which were in round numbers as follows :—

| | | | | |
|---|---|---|---|---|
| 1872 ... | ... | ... | ... | 78¼ million tons.* |
| 1882 ... | ... | ... | ... | 138⅛ ,, ,, |
| 1883 ... | ... | ... | ... | 144¾ ,, ,, |

Only about one-seventh of the tonnage entered and cleared was of foreign nationality.

Nearly three million tons of the increase in the last year took place in the coasting trade.

The over-production of tonnage during the last three years has been very great, and it is not improbable that the depression under which shipbuilding and freights are now labouring will be somewhat protracted before the laws of supply and demand can be satisfactorily adjusted.

Under the heading of "The Port of London" our contemporary had the following paragraph on the 15th ultimo:—"It is considered that there will be no improvement until some unforeseen circumstance, such as a tempestuous winter, shall relieve the market of part of the enormous amount of tonnage with which it is at present glutted." It is not necessary to comment upon the contrary human interests involved in the meaning of this paragraph.

* Coasting vessels in ballast are not included in this number.

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The rapid increase in the use of steel in the construction of steam and sailing ships is worthy of notice. In the year 1881 there were four sailing and 37 steam-vessels built of steel, tonnage respectively 3,064 and 46,338, total 49,402 net, but in 1883 there were 23 sailing and 137 steam-vessels built of steel, tonnage respectively 18,704 and 111,779, total 130,483 net.

On the other hand, wood is fast falling out of use, except in the construction of fishing vessels, there being only 15,000 tons of wooden shipping built in 1883, the vessels built being on an average only 50 tons each.

According to the Returns of Trade and Navigation the gross alterations in the Register of the United Kingdom during the year 1883 were as follows :—

| | Sailing. | | Steam. | | Total. | |
|---|---|---|---|---|---|---|
| | Vessels. | Tons. | Vessels. | Tons. | Vessels. | Tons. |
| Added to the Register ... | 455 | 168,966 | 732 | 582,954 | 1,187 | 751,950 |
| Deducted from ,, ... | 917 | 274,579 | 286 | 189,620 | 1,203 | 464,199 |

There was a decrease of 462 vessels and 105,583 tons amongst sailing ships, and an increase of 446 vessels and 393,334 tons amongst steamships, the net result being a decrease of 16 in the number of vessels, and an increase of 287,751 in the number of tons on the register at the end of the year.

The number and tonnage of the shipping registered in the United Kingdom, Isle of Man, and Channel Islands, which was employed during each of the years previously selected for comparison were as follows :—

| | Sailing. | | Steam. | | Total. | |
|---|---|---|---|---|---|---|
| | No. | Tons. | No. | Tons. | No. | Tons. |
| 1872 ... | 19,709 | 4,245,904 | 2,845 | 1,515,704 | 22,554 | 5,761,608 |
| 1882 ... | 14,585 | 3,424,155 | 4,381 | 3,290,875 | 18,966 | 6,715,030 |
| 1883 ... | 14,159 | 3,369,959 | 4,753 | 3,656,103 | 18,912 | 7,026,062 |

Adding to the men employed, as given in the Return, a master on account of every vessel employed, we get the following result :—

| | Sailing. | | Steam. | | Total. | |
|---|---|---|---|---|---|---|
| | Hands employed. | Proportion per 100 Tons. | Hands employed. | Proportion per 100 Tons. | Hands employed. | Proportion per 100 Tons. |
| 1872 | 156,813 | 3·69 | 69,464 | 4·58 | 226,274 | 3·93 |
| 1882 | 111,786 | 3·26 | 103,117 | 3·13 | 214,903 | 3·21 |
| 1883 | 109,465 | 3·25 | 110,174 | 3·01 | 219,639 | 3·13 |

It follows from the foregoing statements that whilst the employed tonnage of the United Kingdom has increased in volume 22 per



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cent., and in effectiveness 78 per cent., there has not been a corresponding increase in the number of hands employed, but on the contrary, there has been a decrease not only in the proportion of hands per 100 tons, but in the actual number of men. It is true, that an increase took place in the number employed last year, but not in proportion to the increase in the tonnage. This fact may be verified by reference to the proportion of hands employed per 100 tons, which was 3·21 in 1882, and 3·13 in 1883. About half of the increase in 1883 was due to the influx of foreigners, who bore the proportion of 16·42 per cent. to the whole number of seamen employed, against 15·31 in 1882, 11·24 in 1881, and 9·76 in 1871. If this change in the nationality of our seamen continues, we may after a while be able to regard the loss of life at sea with the complacency of the English lady who, after relating the incidents of a disaster in a foreign country, piously thanked Heaven that none of the victims were English.

It should be remembered that the foregoing figures relate to all vessels registered in the United Kingdom under the Merchant Shipping Acts, and consequently include fishing vessels with their crews which were so registered. The Returns distinguish the fishing vessels registered under the Merchant Shipping Act for the first time in 1883 when they appeared to be as follows, viz. :— 3,778 vessels 165,906 tons and 26,968 men (allowing in addition to the number of men given in the Returns a master for each vessel). These facts deserve special attention in relation to the acrimonious discussion which has recently taken place on the subject of Wreck Statistics, and will be referred to hereafter in this article.

The foregoing remarks relate exclusively to vessels registered in the United Kingdom, but it may be well to add for reference a few facts relating to the shipping of the whole Empire. The shipping on the Register of the whole Empire at the end of 1883 was as follows :—

| | Sailing. | | Steam. | | Total. | |
|---|---|---|---|---|---|---|
| | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. |
| United Kingdom and Isle of Man | 18,089 | 3,480,191 | 6,256 | 3,728,115 | 24,345 | 7,203,306 |
| British Possessions Abroad ... | 12,666 | 1,637,550 | 1,950 | 285,562 | 14,616 | 1,923,112 |
| | 30,755 | 5,117,741 | 8,206 | 4,013,677 | 38,961 | 9,131,418 |

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As compared with 1882 there was a decrease of 108,000 tons in the sailing and an increase of 443,000 tons in the steam-vessels on the Register. The net increase was 335,000 tons, of which, as we have shown already, 287,000 tons took place in the shipping registered in the United Kingdom. There was a decrease in 1883 of 426 in the number of sailing vessels, and an increase of 591 in the number of steamers, leaving a net increase of 165 vessels, all of which took place in colonial shipping, there being, as we have seen, an actual decrease of 16 in the number of vessels registered in the United Kingdom.

The net increase in the number of vessels on the Register of the Empire in the previous year was only 44.

### Vessels Lost by Wrecks and Casualties, Year 1882-3.

Having shown the condition of the Register of British Shipping at the end of the year 1883, we will now proceed to show how far it was affected by the wrecks included in the Abstract of Sea Casualties for the twelve months ended June, 1883.

The number and tonnage of vessels totally lost in 1882-3, were as follows :—

| | Sailing. | | Steam. | | Total. | |
|---|---|---|---|---|---|---|
| | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. |
| Belonging to United Kingdom ... ... | 653 | 164,433 | 157 | 113,057 | 810 | 277,490 |
| Belonging to Colonies ... ... ... | 345 | 62,470 | 29 | 6,687 | 374 | 69,157 |
| | 998 | 226,903 | 186 | 119,744 | 1,184 | 346,647 |

The average for the six years preceding 1882-3 was as follows :—

| | Sailing. | | Steam. | | Total. | |
|---|---|---|---|---|---|---|
| | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. |
| Belonging to United Kingdom ... ... | 638 | 167,798 | 107 | 70,962 | 745 | 238,760 |
| Belonging to Colonies ... ... ... | 364 | 71,650 | 15 | 3,683 | 379 | 75,333 |
| | 1,002 | 239,448 | 122 | 74,645 | 1,124 | 314,093 |

The tonnage lost in 1882-3 was 32,000 tons less than was lost in the one year preceding, but 32,500 tons more than the average for the six years preceding.

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There was a decrease of 3,365 tons upon the average of the sailing tonnage lost belonging to the United Kingdom. and an increase of 42,000 tons on the average of the steam tonnage lost belonging to the United Kingdom. There was a decrease of 9,000 tons on the average of the colonial sailing vessels lost, and an increase of 8,000 tons on the average of the colonial steam-vessels lost.

These figures show that English shipowners have nothing to complain of in being taken together with colonial shipowners, for it appears as a matter of fact that colonial shipping, although supposed to be generally of a lower class, is safer from shipwreck than English shipping.

The following table will show how the proportions of loss were sustained under the various headings.

It is right to observe that some unregistered vessels are included amongst the losses, but they are chiefly colonial, and of too small a size to have any perceptible influence on the calculations as far as tonnage is concerned. It should be remembered that the chief merit of statistics lies in their consistency, and that the accuracy of a comparison is not materially affected by the inclusion or exclusion of an irrelevant item if that item is included or excluded throughout, and is not in some part of the period abnormally disturbed.

The percentages in the following table are calculated upon conditions which were constant throughout, and they may therefore be taken to be relatively accurate, at least, in regard to tonnage :—

PERCENTAGE OF LOSSES TO VESSELS ON REGISTER.

| | British Sailing. | | British Steam. | | Colonial Sailing. | | Colonial Steam. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | Tons. | No. | Tons. | No. | Tons. | No. | Tons. | No. | Tons. |
| 1882-3 ... | 3·6 | 4·7 | 2·5 | 3·0 | 2·7 | 3·8 | 1·5 | 2·3 | 3·0 | 3·8 |
| 1881-2 ... | 4· | 5·3 | 2·7 | 3·3 | 3· | 4·9 | 1·3 | 2· | 3·6 | 4·4 |
| 1880-1 ... | 4·5 | 5·6 | 2·1 | 2·6 | 2·7 | 3·7 | ·63 | 1·1 | 3·38 | 4·06 |
| 1879-80 ... | 2·6 | 4· | 1·9 | 2·8 | 2·8 | 4· | ·42 | ·5 | 2·49 | 3·5 |
| 1878-9 ... | 2·7 | 3·6 | 1·9 | 2·5 | 2·9 | 4·7 | 1·2 | 2·9 | 2·6 | 3·5 |
| 1877-8 ... | 2·6 | 3·5 | 1·8 | 2·3 | 2·7 | 3·8 | 1· | 2·2 | 2·5 | 3·23 |
| 1876-7 ... | 3·1 | 3·9 | 1·9 | 2·5 | 3·5 | 4·3 | 1·2 | 1·7 | 3· | 3·58 |

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It appears from the foregoing percentages that, notwithstanding the tremendous increase that has taken place during the last seven years in the steamships registered in the United Kingdom, the percentage of loss amongst such steamships has, with one or two unimportant breaks, constantly increased, and that with the exception of 1881-2 the last year is by far the worst of the seven. The percentage of loss amongst sailing ships is still higher than amongst steamships, but this is not a matter of surprise when it is remembered that the great majority of steamships are comparatively new, whilst owing to the small number of sailing ships built in recent years the average age of such ships must be annually becoming higher. Besides, whatever influence the unregistered vessels referred to above, which are exclusively sailing, have upon the percentages, tends to raise the percentage of loss amongst sailing ships.

The fact that the percentage of loss amongst steamships, and indeed amongst all ships registered in the United Kingdom, is so far above the average, must be embarrassing to those persons who confidently asserted that the statistics for 1882-3 would disprove the arguments based by Mr. Chamberlain on the statistics for the previous year.

The descriptions of the casualties by which vessels were lost in 1882-3 are shown in the following table :—

| | Year 1882-3. | | | Average for Six Preceding Years. | | |
|---|---|---|---|---|---|---|
| | No. | Actual Tonnage. | Average Tonnage. | No. | Actual Tonnage. | Average Tonnage. |
| Founderings ... | 192 | 50,858 | 265 | 203 | 58,025 | 286 |
| Strandings ... | 677 | 200,564 | 296 | 637 | 162,213 | 255 |
| Collisions ... | 81 | 19,130 | 236 | 88 | 22,217 | 252 |
| Other Causes .. | 55 | 24,981 | 454 | 65 | 27,412 | 422 |
| Missing Vessels | 179 | 51,114 | 286 | 131 | 44,226 | 337 |
| | 1,184 | 346,647 | 293 | 1,124 | 314,093 | 279 |

The losses in 1882-3 were 119 in number, and 32,000 in tons less than the losses in the one year preceding, but 60 in number and 32,600 in tons more than the average for the six years preceding.

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The cargoes carried by the vessels totally lost by causes other than collision, are shown in the following table:—

CARGOES OF VESSELS TOTALLY LOST.

| | Ballast. | Timber. | Grain. | Coal. | General. | Fishing. | Other Cargoes. | Total. |
|---|---|---|---|---|---|---|---|---|
| Founderings | 19 | 12 | 14 | 52 | 15 | 23 | 57 | 192 |
| Strandings | 142 | 37 | 46 | 136 | 60 | 59 | 197 | 677 |
| Other Causes | 7 | 6 | 2 | 11 | 5 | 6 | 18 | 55 |
| Missing Vessels | 8 | 5 | 9 | 66 | 3 | 61 | 27 | 179 |
| Totals 1882-3 | 176 | 60 | 71 | 265 | 83 | 149 | 299 | 1,103 |
| „ 1881-2 | 196 | 98 | 63 | 260 | 105 | 161 | 332 | 1,215 |
| „ 1880-1 | 268 | 123 | 68 | 219 | 88 | 113 | 338 | 1,217 |
| „ 1879-80 | 158 | 86 | 79 | 178 | 76 | 56 | 253 | 886 |

Shipowners argued that the numerous losses of fishing vessels in the year 1881-2 tended to show that the heavy losses in the Mercantile Marine during that year were owing chiefly to stress of weather. If the argument was valid in 1881-2, it is also valid in 1882-3. The losses of fishing vessels in the latter years were only 12 less in number than in the preceding year; but the fishing vessels lost were of a much larger size, and the losses were of a worse description than in former years, there being no less than 61 fishing vessels missing during the year, all of which were registered under the Merchant Shipping Acts. The disappearance of these 61 fishing vessels with their crews, may serve to show that the North Sea was visited at some time in the year with a heavy gale; but the frequent recurrence of such holocausts of fishermen seems to indicate that winter fishing on the outer banks in the North Sea is an extremely dangerous avocation, and that the representations of the fishermen on this subject at least are deserving of public attention. The utter destruction of a large fleet of fishing vessels, and the drowning of hundreds of fishermen, is little short of a national misfortune, and certainly should not without inquiry be accepted as a necessary consequence of nearly every great gale.

The growing danger attending the carriage of coal by sea seem to demand special attention. No less than 66 coal-laden vessels were missing during the year 1882-3, of which 39 were missing on voyages between ports in the United Kingdom. Of the 66 missing colliers

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39 were over 20 years old, and of these 39 ten were over 40 years old, one had reached 49, one had reached 50, and one had reached the mature age of 56.

Amongst the losses by "other causes" we find the names of eight coal-laden vessels which were burnt, and of these 6 were burnt by spontaneous combustion of their cargo. Of these 6 vessels two were loaded in the Tyne, one at Dundee, one at Cardiff, and two were on intercolonial voyages.

It is a recognised fact that spontaneous combustion seldom sets up seriously in voyages north of the Equator, and, true to this general rule, all the cases of spontaneous combustion which occurred in coal-loaded vessels in the United Kingdom took place after the line had been crossed.

Of the 66 coal-laden vessels which were missing, only five were bound on voyages across the line, and therefore it may be pretty safely assumed that, after allowing for all other causes to which the disappearance of vessels may be attributed, the proportion of the missing vessels, which is due to spontaneous combustion of coal, must be very small. But the cases of spontaneous combustion which are known to have occurred, show that the danger still exists, although probably modified in its effect by the better knowledge which has been disseminated on the subject since the report of the Royal Commission. For instance, it is a fact of which underwriters should take notice, that several vessels have recently been saved by the use of means for testing the temperature of the coal, whereby they were warned of danger in time to reach a port. Of the five coal-laden vessels which were missing on long voyages, two were bound from the Tyne, and one from each of the ports Cardiff, Hull, and Garston. Two coal-laden steamers were missing on voyages to Bombay; but as they were probably bound *viâ* Suez, which they never reached, they have been regarded as bound on short voyages.

Owing, possibly, to the general adoption of surface ventilation, not one vessel or life was lost during the year by explosion of coal gas. This in itself is a very desirable result; but it should not be forgotten that explosion of gas seldom, if ever, occurs more than three days after leaving port, and that a temporary system of venti-

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lation, which could be dispensed with when unnecessary, would be preferable to the frail structures now in vogue, which, it is said, are a permanent source of danger after their usefulness has ceased. This is a matter for shipowners; it is clear that surface ventilation has almost stamped out explosion of coal gas, and it is now only necessary to make sure that the ventilators are not a source of danger as well as safety.

Judging, however, by the age, character, and loading of the coal-laden vessels which foundered, it is more than likely that the losses of the missing coal-laden vessels were due to causes widely different from spontaneous combustion of coal or explosion of coal gas.

The grain-laden vessels lost during the year 1882-3 were more in number than were lost in either of the two preceding years, but less than were lost in the year 1879-80 The increase was, however, entirely in the losses by stranding—the grain-laden vessels missing and foundered being only 28, against 34, 32, and 39 in the three preceding years.

### Loss of Life by Wrecks and Casualties.

The loss of life by sea casualties still remains to be dealt with. This subject has been so ably treated by Mr. Chamberlain and Sir T. Farrer, from an official point of view, and on the other hand, by Mr. Dunlop, Mr. Laing, and other representatives of the shipping interest, that there is little left to be said by way of argument. It is now for the Royal Commissioners, who will soon meet to inquire *inter alia* into the extent and causes of, and the remedy for wrecks and loss of life at sea, to hold the balance between arguments which, however able and honest in themselves, are necessarily more or less *ex parte*. This has notably been the case on the part of the shipowners. No one who has followed the course of the discussion on the Merchant Shipping Bill can have failed to notice the querulous persistency with which every figure and statement put forward by Mr. Chamberlain has been questioned or denied, and the ingenious artifices which have been employed to narrow a great controversy upon a broad question to an acrimonious dispute about unimportant details. From the very first outset this has been the case. In his speech to the deputation

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of shipowners on the 8th March, 1883, Mr. Chamberlain stated that he had taken out the loss of life for six years, and having excluded losses by stranding and collision, found it to be an increasing quantity. His critics found no fault with him for excluding lives lost by strandings and collisions, but censured him severely for not having also excluded lives lost in foundered and missing fishing vessels, in merchant vessels not totally lost, &c., &c. It was, however, shown distinctly, in the editorial note to Mr. Chamberlain's speech, reported in this journal in April, 1883, that there was an increase of 79·47 per cent. on the average losses in five years, after excluding all the items to which the shipowners objected. This was quite as much as Mr. Chamberlain contended for.

Mr. Chamberlain further stated that "of the total number of seamen employed, one in sixty met with a violent death last year from drowning;" and he asked, "Well, now, are you gentlemen here present, gentlemen of experience and knowledge, going to tell me that in all these cases—I would almost say in a large proportion of these cases—these terrible disasters were the act of God, for which no human being is responsible. I don't believe it."

Shipowners were much scandalised by this statement, and at first strenuously denied its accuracy, but a further editorial note to Mr. Chamberlain's speech in this journal, confirmed by a Parliamentary Return (C. 3,875) subsequently issued, established the absolute statistical accuracy of the statement.

We make this reference to Mr. Chamberlain's first speech because it contains the text of the whole discussion, and because the notes which accompanied it contain a complete explanation which has never been questioned, of the statement put forward by Mr. Chamberlain with regard to loss of life at sea, and especially with regard to the loss of "1 in 60" in the year 1881-2.

A Parliamentary return has just been issued containing the necessary details to set the matter finally and incontrovertibly at rest. It will be found, as explained in the return C. 3,875, that some fishermen, &c., are included amongst the lives lost by drowning and accident other than wreck, but at the same time we must place *per contra* the fishermen, about 27,000, employed in fishing vessels

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registered under the Merchant Shipping Acts, and thus the "1 in 60" remains irrefutable, But this wrangling over details is what we complain of. The gist of the whole matter is contained in Mr. Chamberlain's outburst with reference to the opposition of certain Shipowners' Associations to change or legislation of any kind. "'No adequate necessity!' No adequate necessity when 3,118* lives were lost at sea last year, and many of them by preventible causes. Adequate necessity is certainly shown for some change." The answer of the shipowner is not that no lives or few lives are lost by preventible causes, but that 3,118 is not the precise number, that some of the lives lost were fishermen or passengers or colonial seamen, and that some of them were lost in wooden vessels or in cargo steamers, or in passenger steamers, or in some kind of vessel or trade in which the particular apologist is not particularly concerned.

It is beyond dispute that several thousands of lives are annually lost at sea in various kinds of British merchant vessels. It is equally beyond dispute that many of those lives are lost unnecessarily through negligence, carelessness, or recklessness on the part of persons wholly or partly responsible for their condition, equipment, loading, or navigation. If the profit and the danger of the trade were joint concerns; if the sailor participated in the profit in proportion to his labour and risk of life, or if the owner lost his property when the sailor lost his life, there might be something found to say in favour of leaving things alone; but such is not the case. Although, as we have shown, the employed tonnage has increased 22 per cent. in quantity and 78 per cent. in effectiveness in the last 10 years, there has been an actual decrease in the number of hands employed. At the same time the sailor's work has not become less trying or responsible, whilst his wages in at least 28 out of 27 voyages enumerated in the "Progress of British Merchant Shipping" were actually lower in 1883 than they were in 1872.

Whilst, then, the men are fewer in number, their wages lower, and their work more arduous and of greater responsibility,

* He might have said 3,975.

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it is a matter of certainty that their lives are no safer than they were ten years age.

Referring to the valuable Return moved for by Mr. W. H. Smith, which shows the loss of life by collisions and other casualties during the 15½ statistical years ended June, 1882, we find, on adding the figures for the year ended June, 1883, that no less than 41,820 lives were lost by wrecks of British *merchant* vessels during the 16½ years. The number of seamen lost was 35,651, giving an annual average of 2,161, against 2,224 in 1882-3, 3,006 in 1881-2, and 2,218 in 1880-1. The loss of life in the last three years was higher than the loss in any other triennial period in the Return, and within 100 of the aggregate of the three exceptionally bad years, 1867, 1873-4, and 1876-7. These figures contain no lives of passengers nor fishermen, whether employed in registered vessels or not. They show that the loss of life in British vessels has been higher during the last three years than when it afforded Mr. Plimsoll a text with which he stirred the heart of England to its depths. But shipowners have refused their co-operation to remedy this state of things, and their organ of opposition in the press boasts that legislation is impossible in the face of an organised hostile interest. Legislation of this nature was never contemplated as was shown by Mr. Chamberlain's repeated appeals for the assistance and sympathy of shipowners, but it may speedily become possible through the effect on the public mind of an obstinate and selfish hostility to every measure of reform.

Mr. Smith's Return includes no losses in fishing vessels, but it includes all losses in British Merchant ships, that is to say, ships registered in the Colonies as well as in the United Kingdom. Another Return was therefore presented by Mr. Chamberlain, dealing only with losses from merchant ships belonging to the United Kingdom and registered under the Merchant Shipping Act. This Return is described by Mr. Chamberlain as the most complete of any ever presented to Parliament. From this Return it appears that during the 13 years ended 1883, 21,820 seamen (not including fishermen) were lost by wrecks, 13,827 seamen were drowned when vessel was not damaged, and 3,817 were killed by

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accident other than wreck, making a total of 38,964 seamen drowned or otherwise killed in merchant ships registered in the United Kingdom, or an average of about 2,997 per annum. The number lost in 1883 was 3,304 or 307 above the average. The rate of loss in 1883 was, by drowning alone, 1 in 72, and by drowning and other accident, 1 in 66. The loss of seamen's lives in the year 1883 by wrecks of vessels registered in the United Kingdom (excluding fishing vessels) was 254 above the average for the four preceding years, and higher than the loss in any individual year except 1872, 1874, and 1881.

Almost the entire increase took place in missing steamers, in which the loss of life was 257 above the average for the twelve preceding years, and absolutely 147 higher than the next worst year in the whole term.

Only 3,148 passengers are stated to have been lost during the thirteen years, but it is probable that this return includes passengers lost by wreck alone. The Greenock Chamber of Shipping have complained that passengers have not been taken into account in calculating the rate of loss at sea. It is, however, obviously impossible to make any reliable calculations in the absence of *data* as to the time each passenger is aboard ship, but at the same time it is difficult to perceive how any calculation of this nature would serve the Greenock Chamber if they represent, as we presume they do, cargo shipowners. In his handbook to the "Sea Service," Mr. Gray has given some special instances in regard to safety on board passenger ships, which he says, correctly, is extreme, but it should not be forgotten that if this favourable factor be taken away in regard to seamen as well as passengers, the cargo steamers will be in a worse position than ever. Leave passenger steamers and their crews entirely out of account, and it will be found that the rate of loss on board cargo steamers is very much aggravated.

The Return (229) moved for by Mr. Charles Palmer, shows that whilst 9,946 crew and 735 passengers were lost in British cargo and passenger ships and steamers, excluding tug-steamers, barges, lighters, and fishing-vessels, during the six years ended 1883, only 389 crew and 339 passengers were lost in passenger-

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steamers certificated by the Board of Trade during the same time. Another Return (160), moved for by Mr. Broadhurst, shows that 4,760 passenger steamers have been certificated by the Board of Trade during the five years ended 1883, and that, during the same period, only 8 certificated steamers foundered or were missing, that is, 1 in 595. Under these circumstances, it is easy to understand why cargo shipowners would like to throw in their lot with passenger steam shipowners.

In regard to Mr. Palmer's Return, a letter appeared in the *Standard*, signed by the Secretary of the North of England Steam Shipowners' Association, of which Mr. Palmer is President, which is a striking illustration of the fallacious inferences that may be drawn from valuable Returns by interested or ill-informed persons. In summarising the Return, Mr. Welford makes the case appear worse than it really is, by including the passengers lost, and we will, therefore, in quoting his words *verbatim*, give in brackets the number of seamen lost.

He says: "In the year 1878 the loss of life in sailing ships was 342 (309), and in steamers 348 (323); total, 1,190 (1,132). In the year just ended the loss of life in sailing ships is 1,099 (1,083), and in steamers 897 (830); total, 1,996 (1,913). Now, the increase of steam tonnage since 1878 is 1,847,730 registered tons; the decrease in the tonnage of sailing-vessels is 727,557 tons, or a net increase to the tonnage of the United Kingdom of 1,120,173 tons, and yet, with this enormous addition to the Mercantile Marine of this country, the loss of life is represented by an excess of only 806, of which 257 occurred in sailing-vessels."

Now what, in the name of patience, has the increase in tonnage got to do with the number of lives lost? It has already been shown that the increase in tonnage is quite independent of and not accompanied by an increase in the number of hands employed. The merest tyro will understand that, if the loss of life in 1883 is to be compared with the loss of life in 1878, the rate of loss must be calculated on the number of hands employed, and not upon the tonnage. Comparing the lives lost as per Mr. Palmer's return, with the hands employed as per the Annual Statement of Naviga-

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tion and Shipping, we get the following result for the two years 1878 and 1883:—

| | | 1878. | 1883. | | |
|---|---|---|---|---|---|
| Sailing | Hands employed... | 140,664 | 111,786 | Decrease | 20 per cent. |
| | Do. lost ... ... | 809 | 1,083 | Increase | 34 ,, |
| Steam | Hands employed... | 76,217 | 103,117 | Increase | 35 ,, |
| | Do lost ... ... | 323 | 830 | Increase | 157 ,, |
| Total | Hands employed... | 216,881 | 214,903 | Decrease | 1 ,, |
| | Do. lost ... ... | 1,132 | 1,913 | Increase | 69 ,, |

The number of hands employed is obtained by adding to the seamen employed at the beginning of the year a master for each vessel employed.

We have quoted Mr. Welford's letter as a fair sample of the reasoning by which a certain section of shipowners have essayed to convince the public that Mr. Chamberlain has exaggerated his case with regard to loss of life at sea. A glance at the above statement will show that the figures used by Mr. Welford are eloquent in proving the very opposite of the argument for which he contended.

Another Shipowners' Association has, with wearisome iteration, suggested a charge of inconsistency against Mr. Gray, by referring to his Handbook to the Sea Service, in which he said that a man was "safer at sea than anywhere else in a fairly good ship, properly manned and carefully navigated, as the very great majority of British merchant ships are." We are much mistaken if Mr. Gray has altered his opinion. If he could have said the same for the whole of the Mercantile Marine he would have done so, but unfortunately there is a minority not "fairly good" nor well manned, in which a sailor is not "as safe as anywhere else."

It was Mr. Gray's contention, and it has been the contention of the Board of Trade throughout the recent discussion, that almost absolute safety to human life is attained in the passengers and cargo ships belonging to companies and owners whose paramount interest it is either on account of *prestige* or non-insurance to keep their ships afloat, and that some measure of the same security might be extended to the crews of the "minority" of cargo ships, which are not "fairly good" or "properly manned," by making it to be the interest of their owners also to keep them afloat. "A

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passenger steamship is as safe as a passenger train," said Mr. Gray, and in proof of this statement he adduced facts concerning the Inman, P. and O., Union, Castle, Cunard, City of Dublin, Folkestone, Dover, and Glasgow and Belfast steamers, which fairly surprised himself. But Mr. Gray's critics should remember that commendation of the "majority," including passenger ships, is condemnation of the "minority," which is composed of the residuum of cargo ships owned by the "black sheep."

Furthermore, Mr. Gray was justified in stating when he wrote his book that the death-rate was low. His book is dated 1878, and in that year the loss of life by wrecks had reached its lowest point after the first Plimsoll agitation, viz., 1,131; but in 1879 it had risen to 1,388, in 1880 to 1,681, in 1881 to 2,352 (more than double), in 1882 it fell to 1,510, but in 1883 it rose again to the large total of 1,913. These lives were lost by wrecks alone, and did not include deaths by drowning and accident other than wreck.

Shipowners claim that the general death-rate at sea is low, but they do not attribute this fact to its just cause. The Returns of the Registrar-General of Seamen, on which the death-rate is based, relate only to deaths at sea and some deaths from sickness abroad.

Consequently, as voyages are made more quickly, the rate of deaths from sickness appears low and decreasing, owing to the sick being discharged and dying ashore. In the year 1882, for instance, the deaths of 4,659 seamen were reported to the Registrar-General of Seamen, of whom 3,453 met their deaths by drowning, and only 1,206 died from diseases and all other causes, including murder, suicide, &c. It follows that whilst the deaths from natural causes, including murder, suicide, and causes not ascertained, were only 6·25 of the hands employed, the deaths from wreck, drowning, and other accident reached the terrible proportion of 17·63 per thousand. The annual death-rate by accidents in mines is 2·34 per 1,000, and on railways 3·74 per 1,000.

In view of these facts it is idle to say that the death-rate amongst seamen is not abnormally high.

We have devoted so much space to the various Returns recently issued, that we must be brief in our notice of the loss of life by wrecks dealt with in the Wreck Abstract for 1882-3.



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The number of lives reported to the Board of Trade during the year 1882-3 as having been lost by wrecks, casualties and collisions was as follows:—

LIVES LOST FROM BRITISH FISHING AND MERCHANT VESSELS IN 1882-3.

| | Lives Lost. |
|---|---|
| On or near the United Kingdom ... ... ... | 843 |
| In Harbours and Rivers of the United Kingdom... | 31 |
| On Coasts of British Possessions Abroad ... ... | 262 |
| On Coasts of Foreign Countries ... ... ... | 116 |
| In Harbours and Rivers Abroad ... ... ... | 131 |
| At Sea... ... ... ... ... ... ... | 1,691 |
| Total ... ... ... ... ... ... | 3,074 |

Leaving out of account the 162 lives lost in harbours and rivers at home and abroad, the remaining 2,912 lives were lost as follows:—

LIVES LOST IN BRITISH VESSELS 1882-3.

| | | Coasting. | Oversea. | Fishing. | Total |
|---|---|---|---|---|---|
| Founderings | United Kingdom ... | 33 | 161 | 29 | 223 |
| | Colonial ... ... | 22 | 9 | — | 31 |
| Strandings | United Kingdom ... | 162 | 284 | 24 | 470 |
| | Colonial ... ... | 30 | 41 | — | 71 |
| Collisions | United Kingdom ... | 36 | 71 | 25 | 132 |
| | Colonial ... ... | 4 | 27 | — | 31 |
| Other Causes | United Kingdom ... | 29 | 120 | 64 | 213 |
| | Colonial ... ... | 69 | 28 | 13 | 110 |
| Missing Vessels... | United Kingdom ... | 289 | 831 | 343 | 1,463 |
| | Colonial ... ... | 43 | 117 | 8 | 168 |
| Total | United Kingdom ... | 549 | 1,467 | 485 | 2,501 |
| | Colonial ... ... | 168 | 222 | 21 | 411 |
| Grand total ... ... ... | | 717 | 1,689 | 506 | 2,912 |

The number of passengers lost during the year was 182, of whom half were lost in colonial vessels, and half lost in vessels belonging to the United Kingdom. Fifty-nine passengers were lost in vessels that foundered, including 56 who were lost in the Leith steamer *Navarre*, and 60 passengers were lost by the burning of the little steamer *Grappler* on the coast of Vancouver Island. Twenty-seven passengers were lost by strandings, twenty-two by collisions, and four by undescribed causes, whilst ten were lost in missing vessels. Compared with the average for the six years preceding, the year 1882-3 showed a decrease of 43 in the number of lives lost by

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founderings, and a decrease of 30 in lives lost by strandings. On the other hand there was an increase of 20 in the number of lives lost by collisions, an increase of 121 in the number lost by casualties from "other causes," and an increase of 200 in the number of lives lost in missing vessels. The net increase in the number of lives lost in 1882-3, as compared with the average for the six preceding years, was 265.

As regards the trades in which lives were lost, we may observe that 912 lives were lost in coal-laden vessels, of whom 628 were lost in missing vessels. Only 299 (lower than any year of the seven except 1880-1) lives were lost in grain-laden vessels, and of these 168 were lost in missing vessels. Ballast was responsible for the loss of 157 lives, of whom 60 were lost in missing vessels.

### Lives Saved from Shipwreck.

It is pleasant to turn away from the foregoing records of disaster and death to examine the tables relating to rescue of life from shipwreck. Here we find that 4,778 lives were saved from drowning by shipwreck on the coast of the United Kingdom, of whom 603 were saved from death by the rocket apparatus, 625 by lifeboats, 2,530 by ships' own boats, the remainder having been saved by boats from shore, passing vessels, &c.

The number of lives placed in peril by shipwreck of British vessels abroad was 8,346, of whom 337 were saved by rocket apparatus, 131 by lifeboats, and the rest by various means. Lifebuoys, and all other special contrivances kept on board are credited with saving 28 lives, a very small result for the fuss made about such things.

It is unnecessary to carry this analysis any further. It has been attempted to embody the gist of the various Returns recently published by the Board of Trade, in order that the facts may be of use for reference when the action of the Royal Commission shall again bring the subject of loss of life at sea into prominence. It is to be hoped that the desired remedy for the loss of life and property at sea will be discovered before the arrival of that tempestuous winter which our contemporary thinks necessary to clear the ports of their superfluous tonnage.



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## MINERAL OIL ON BOARD SHIP.

STEAMING round Land's End a few days ago in one of our large ocean ships I read "Anticipo's" letter in the current number of your journal with reference to Mr. Kenward's article on "Recent Improvements in Ships' Signal Lights," which appeared in your June issue.

That article was a most interesting one, and its able treatment of the subject cannot fail to have a good effect in calling the attention of shipowners to its importance.

There can be little doubt that electricity is theoretically the most perfect light, whether for street illumination, ship or domestic use; but the practical difficulties against its general introduction have yet to be overcome.

But why mineral oil has not entirely superseded colza and other vegetable or animal oils it is very difficult to understand, unless it is due to the prejudice that has often been created against mineral oils by the use of the common petroleum referred to by "Anticipo" in his letter.

For lighthouses and ships' use it is found that a much higher standard of safety is required than is the case with mineral oils for domestic use, in order that absolute immunity from danger may be ensured under all possible circumstances arising from changes of temperature, whether incident to the consumption of any oil in confined spaces or from climatic changes or otherwise. And here the home manufacturers have been particularly successful, as one or two of them having given special attention to the requirements of such services, have produced oil as nearly perfect in all essentials as may be. To insure success with such oils a more accurate, scientific, and practical knowledge is required than might generally be supposed to be necessary, not only of the chemical constituents of the oils themselves, but also of the wicks, burners, and lamps, and the general conditions under which the oils are to be burned. The great difficulty or problem to be solved in producing oils for such services was to obtain oils with safety standards ranging from 140° to 300° Fahr., and which would at the

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same time possess a facility for traversing wicks so as to keep lamps burning for 16 hours or more without retrimming or without any material diminution of the flame. Safety was readily secured by the addition of heavy sections of the distillate, but this was fatal to good or uniform photometric results over lengthened periods, or after continuous burning for some hours. Oils showing this and other manufacturing errors well-known to careful experimenters, soon clogged the wicks, and crusting and carbon fungi followed, causing the flame to diminish rapidly.

Mineral oils, being rich in carbon, certainly possess a very high illuminating power, and the main thing required on the part of the manufacturer is that he should fully understand what are the essential qualities of a really good, safe, and reliable oil for light-houses, signal-lamps, and general ships' use; and these are, that the oil should be chemically pure and homogeneous, or an oil carefully fractionated.

But it is of equal importance that shipowners should fully understand that the proper handling and storing of the oil, and cleaning of the lamps, are quite as essential to successful results in burning.

So far as the lighthouses are concerned, no difficulty in this respect ever arises, as they usually have the benefit of such experienced and skilled assistance that they are able at once to detect the *true* cause of any failure or partial failure, if such should arise at any time.

But the case is sometimes different when we come to deal with ship-lighting, as here instructions have too frequently to be carried out by very ordinary or inferior workmen, whose duty it is to attend to the work of tanking the oil, drawing it off for use, cleaning, trimming, and filling the lamps, &c.

Several kinds of oils are also necessarily used on board ships; usually one or more kinds of lubricating oils, and cocoanut or other common fatty oil for use in ordinary lamps, but separate vessels are seldom provided for mineral oils. Water, too, is often used, instead of a little of the mineral oil itself, to wash out the tanks and lamps.

Now, anyone who knows much about mineral oils, is aware that

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any contamination of such oils with animal or vegetable oil or water is most detrimental to good results in burning.

It is evident, therefore, that, without proper instruction and without some care and supervision in carrying out instructions, ordinary workmen will be only too liable, unwittingly or from carelessness, to make mistakes.

The objectionable phenomena apparently referred to by "Anticipo," when he speaks of the occupants of saloons and cabins being sometimes partially poisoned, arises either from the use of inferior oil which crusts the wick—or from some fatty oil or water having got mixed with the mineral oil in the lamps causing the flame, in either case, to diminish, with the result that a heavy, offensive odour is given off. One also becomes sensible of this unpleasant odour if the flame of the lamp, from any cause, is turned too low down, and left to burn for any time in that condition.

But with a well-made mineral oil, together with a little care in storing and using it, the best results with a minimum of trouble are certain to be realized, while the economy, which is a very important consideration to shipowners at present, is very great. The cost being not more than one-fourth that of colza oil.

A good deal might also be said with regard to wicks, which play an important part in the successful burning of oils; and also with regard to the comparative light-giving values of various lamps and burners; but shipowners are somewhat averse to contemplate any expense connected with a change of lamps; and space enough in your valuable journal, you may probably think, has already been occupied with these remarks, which a long experience with lamps and oils has prompted me to make.

August, 1884. W. E.

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# THE COMMERCIAL CODE OF RUSSIA.

(*Continued.*)

## CHAPTER VI.

### *On the Chartering of Ships and Vessels.*

### SECTION I.

### *On the Formation and Completion of the Contract.*

1000. Ships may be chartered by the owners themselves, or by the masters appointed to them.

1001. An hired master cannot charter the ship entrusted to him except with the knowledge and consent of the owners, and the receipt from them of orders and instructions on the subject in writing, when he is not in the place where they reside and are living. (*See* Art. 887, s. 5.)

1002. In case the master does not receive a reply from the shipowners as to their consent to chartering the ship, he may act according to the best of his judgment for their advantage, so long as he can show that by waiting for the said reply, damage, detriment, or loss to the owners, ship, vessel, or cargo might have ensued.

1003. If a master who for the causes mentioned in the preceding Art. (1002) without waiting for the reply of the shipowner, has chartered the ship, but has not yet commenced to load, receives from the owner a reply contrary to the arrangements made by him; in such case he may withdraw from the contract, should the owner consent to pay to the hirer the penalty prescribed for breach of contract. But when he has chartered, and already commenced to load, or when the owner of the ship does not consent to pay the penalty, the master must fulfil his contract, acquainting the owner of the ship with the fact, and demanding orders and instructions how to proceed with the ship on the completion of the voyage.

1004. In hiring a ship two cases may be met with:—(1) The hire by one or more owners of goods of the whole ship, or a

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definite part of it, for a single or double voyage, or for several voyages, defined by place or by time; (2) the letting of the ship by the owners of it, or by the master, for loading goods from different owners in such quantity as the master or owners of the ship can or will take. In both cases of the hire of a ship for cargo, a written contract, which is called (*tsertepartie*, also *sertepartie*) a charter-party, must be made.

1005. The contract for the hire of a ship for cargo is drawn up on properly stamped paper, and contains:—(1) The name of the ship and its capacity in lasts; (2) the name of the master; (3) the name of the owner of the goods or of the consignee; (4) the place and time agreed upon for loading and unloading; (5) the stipulated payment (freight), and the cargo money (gratuity) for the master; (6) a statement whether the whole of the ship is hired or only a definite portion of it.

Note (Supt. of 1876).—Contracts for the hire of a ship for cargo (charter-parties) are subject to stamp duty. (Tax Regulations, Art. 2, App. Supt.)

(The Regulations being liable to alteration at any time are not printed here.)

1006. Both parties to a charter-party must agree upon the penalty for non-performance.

1007. The penalty for non-performance on the part of the charterer of a ship should not exceed the amount of the freight and master's gratuity stated in the contract.

1008. The penalty for non-performance on the part of the owner should not exceed half of the freight and half of the gratuity.

1009. The penalty for non-performance on the part of a person having a share in the ship, goods, or cargo, must not exceed the half of his part or share.

(This regulation appears to be inconsistent as regards the charterer who ships his own goods as cargo to the previous Art. 1007.)

1010. A contract for the hire of a ship for cargo is drawn up in duplicate and signed by the contracting parties. The person hiring the ship or vessel keeps one copy, and the person letting it the other.

1011. A contract for the hire of a ship for cargo must be presented at a broker's, and registered in his brokers' book.

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## SECTION II.

### *On the Performance of the Contract.*

### I.—*Of the Cargo List.*

1012. On the conclusion of a contract for the hire of a ship, the master makes out the cargo list (manifest) in which he enters all the goods and cargo taken on board the ship. (*See* note to Art. 925, *ante.*)

1013. The cargo list (manifest) should be made out in conformity with the notes and memoranda of the mate* (Art. 926), and in two or more copies according to the number of owners of goods or cargo, each of whom should have a list signed by the master. One copy of the cargo list is also signed by the hirer of the ship, and this copy is entrusted to the master, who keeps it with him on board the ship, as one of the ship's papers, until the goods taken on board are unloaded and the freight received; the other copies are entrusted to the owners of the goods or cargo.

1014. If there is a variance between the cargo lists, credit is given in preference to that which was signed by the master as well as the hirer. The master is bound to account according to the list and is responsible, unless there is evidence of fraud through the erasure of words or alteration of letters or figures.

### II.—*Obligations of the Master.*

1015. The master is bound by virtue of the charter-party:—(1) to have the chartered ship in proper condition and seaworthy for the chartered voyage; (2) to take on board the goods according to the cargo list; (3) to see that the ship is not overloaded; (4) to set out on the voyage on the day appointed and complete it with all possible despatch; (5) on arrival at the place of destination to deliver the goods or cargo without unnecessary delay.

1016. The master is responsible for the vessel being strong, staunch, and tight, and provided with all necessary tackle, crew, and provisions for the voyage agreed upon.

1017. If a master in a charter-party declares its burthen to be greater (than is the fact), that is to say, if he agrees to take more

* See notes to Art. 864, 925.

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cargo than the vessel can carry, he is liable to the owner for the payment of the freight.

1018. The goods and cargo are at the risk of the master from the moment that the ship's tackles are put upon them ; and from that time, should damage or loss result to the goods or cargo, such as to fall down or go to the bottom, or to be spoiled or damaged by the default or neglect of the master, he is bound to pay for all such damage or loss in full ; if it be caused by the default or neglect of the seamen, the master has a right to recover the loss by deducting it from their pay.

1019. If a master contracts with one or more persons to take different descriptions of goods or cargo on board the vessel, he must take care in stowing and arranging them not to cause damage or detriment to goods of any one quality or quantity. Damage, detriment, or loss caused to the goods by want of due precaution, is recoverable from the master out of the freight, and should that be insufficient, then from his employer.

1020. The master is bound to complete the voyage undertaken with all possible despatch. Except in case of extreme necessity, he must not alter the course of the voyage, or deviate.

1021. Should the master not commence the voyage on the day agreed upon in the charter-party, not being detained by foul winds or weather, he is bound to pay to the charterer the penalty for delay (demurrage) for each 24 hours stated in the contract.

1022. If the ship is damaged in the course of the voyage, and the master finds it necessary to put into a harbour or roadstead, and finds that the ship cannot be repaired in time for the goods or cargo to be delivered at the place of destination within the time stated in the contract, and that serious damage, deterioration, or loss might result to the owners of the goods or cargo thereby, the master may charter another ship to carry on the goods or cargo. The freight in such a case must be regulated on the principle laid down in the rules for averages. (Art. 1095.)

1023. On arrival in a foreign town, port, or harbour, in the course of the voyage as well as on its completion in the port of discharge, the master is bound to observe quarantine regulations in all details, and generally to conform to local regulations,

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laws, and customs, and to make himself acquainted with them immediately.

1024. A master, whatever be his nationality, on arrival in a Russian port, is bound to conduct himself exactly according to Russian custom-house and port laws, and is responsible for their infraction by himself and by the crew of his ship.

1025. On arrival at the place of destination the master is bound to deliver the goods or cargo in the same condition as that in which he received them, should the quality be such that they did not (naturally) spoil during the voyage.

1026. All unforeseen causes—such as *oppression*,* *protestation*,* or detention in a foreign town, port, or harbour—are not considered as non-performance of the contract; similarly, damage, detriment, or loss occasioned by perils of the seas, through pirates or storms, do not subject to a penalty for breach of contract. But the master is bound to make the necessary declaration (protest) concerning it, on the basis of the rules laid down below. (Art. 1090.)

1027. On arrival at the place of destination, the master delivers the goods or cargo to the person who presents to him the cargo list signed by him, which he demands on delivery of the goods or cargo, and according to which he receives the freight agreed upon.

### III.—*On the Obligations of the Charterers.*

1028. A person chartering a ship to load his goods is bound to deliver them at the proper time and in proper condition, and pay the master the hire of the ship.

1029. If one or more hirers of a ship do not bring their goods to be loaded on board it on the day fixed in the contract, they are bound to pay the master the penalty for delay (demurrage) for each day stated in the contract.

1030. If a master, in order to get a full cargo on board his ship, contracts with several merchants to take their goods in the ship, and agrees to sail on a fixed day, he must go, not delaying an hour.

* (These expressions probably are meant to be equivalent to "Restraint of Princes or People.")

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And if any of the contracting parties do not bring their goods before the fixed time, or delay sending them till the sailing of the ship, such person is nevertheless bound to pay the freight and gratuity as if the goods had been taken.

1031. If a merchant makes a bargain with a master for the loading of certain goods, which he cannot furnish in the stipulated time, he has a right either to transfer his bargain to another merchant, or to substitute for the stipulated goods others, provided that these latter be of such a quality as cannot cause damage to other goods laden on board the ship. This, however, rests on the responsibility of the master, according to the rule laid down before in Art. 1019.

1032. If the charterer does not fill the vessel up, that is to say, does not put on board it as much goods or cargo as contracted for, and space is left in the ship, he is, nevertheless, bound to pay freight for this space.

1033. If anyone loads goods on board a ship, declaring only the numbers and marks to the master, and it subsequently appears that such goods belong to the number, the export of which is prohibited, and in consequence the ship or the other goods laden on board it are detained, and thereby sustain damage, detriment, or loss, a demand of payment of a full indemnity must be made on the owner of the prohibited goods.

1034. If a vessel when laden be detained by the authorities because of the goods or cargo, the charterer must indemnify the master for the amount of freight mentioned in the contract. If from any other cause the ship when not loaded is detained by the authorities, the court must define, having regard to their duties, the pay which the master and seamen are entitled to.

1035. On the completion of a voyage and delivery of the goods or cargo, the charterer is bound to pay the master according to contract, as also whatever is due to him, according to the conditions (of the contract), on account of rebate, disbursements in port, and such like. On this being done the master of the ship or vessel may demand the return of the cargo list signed by him for the goods delivered.

1036. If the master has a doubt as to receiving the freight

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according to contract on account of the bankruptcy of the charterer of the ship, he may acquaint the local authorities and demand that the (discharge of the)* ship be suspended until he receives the payment. Creditors have a similar right (with regard to loading)* should they have cause to fear that a debtor, near bankruptcy, is placing goods on board a ship to avoid payment of debts.

1037. If, during the voyage of a ship, the owners of it, or charterers and shippers become insolvent, and on arrival of the ship at a town, port, or harbour, the ship, goods, or cargo be seized for payment of the said debts, the master has the right to demand that, in preference to all other creditors, payment should be made to him in full of the amount due according to the contract.

## CHAPTER VII.

### *On the Defence of Merchant Vessels and Ships.*

### SECTION I.

### *Of Convoy.*

1038. When a war vessel is appointed as convoy, it hoists the flag of the Mercantile Marine, and by the discharge of a gun gives the signal of protection and defence. On this signal being given all the masters of the merchant vessels must immediately assemble on board the war vessel, and give a written declaration to the commander of it of the name of each vessel, and stating the cargo and town or port of destination. The commander of the war vessel gives to each of them general sailing orders, and signals for keeping company, also sealed orders concerning the place of rendezvous in case of parting company.

1039. In the first orders are stated the order of sailing and signals of assembly; in the second orders, the rendezvous or place of meeting; both are signed by the commander of the convoy.

1040. The master of a merchant ship sailing under convoy having received sailing orders from the commander of the convoy, is bound to conform to them in all details and to obey signals; in

* (The words in brackets are not in the Code, but appear necessary to make sense of the article.)

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night-time, and also in cloudy or foggy weather, he must not go further away from the convoy than the distance at which the signal gun may be heard and the lights seen.

1041. For leaving the convoy without the permission of the commander of it, or for breaking any of the rules prescribed for ships sailing under convoy, a master is punished according to the rules set out in the Naval Regulations.

1042. A master must not unseal the orders concerning the rendezvous except in case of his ship parting company from the convoy. In time of danger from the enemy, and even when the master is taken prisoner, he is bound to destroy the orders for rendezvous; and in case of a favourable voyage, to return them to the commander of the convoy on arrival at the town or harbour.

## SECTION II.

*Of Agreements for Mutual Defence of Merchant Ships and Vessels.*

1043. If in time of danger from the raids of pirates or attacks of the enemy, there are at a town, or port, two, three, or more Russian merchant ships, and no convoy is at hand, the masters may conclude among themselves a convention in writing for mutual defence in case of danger; each of them must ratify the convention by his signature and have a copy of it with him, keeping to it strictly and inviolably until the completion of the voyage for which it was made.

1044. The masters, who sign a convention for defence, must select among themselves a chief commander and obey him.

1045. The selected chief is bound to give the other masters sailing orders and signals for assembly, and also sealed orders as to the rendezvous in case of separation, and they are all bound to act according to them, as before laid down concerning the orders for convoy by a vessel of war.

1046. The selected chief hoists a distinguishing flag on the main-topgallant-mast and has a light on the poop by night.

1047. In case of attack by the enemy or a pirate, all the merchant ships, which are under mutual defence, must defend themselves and each other mutually, bravely and resolutely.

1048. If one ship, during an attack by the enemy, leave another

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ship in danger, and contrary to the convention for mutual defence, the master, seamen and sailors are tried in accordance with the Naval Regulations. Anyone who appears cowardly and timid in defence is dealt with in the same manner (*i.e.*, such mutual convention renders the parties to it liable to Martial Law, and to be tried by Court Martial).

1049. A master who has signed a convention for defence, and has withdrawn himself designedly and contrary to it from the defence before the completion of the voyage, is obliged to pay double for damage, detriment, and loss, which the others constituting the defence, sustain in defending themselves. Should such person after voluntarily withdrawing himself suffer damage, the defence does not pay for it, but he himself is responsible for all.

1050. If in the mutual defence of merchant ships from pirates or the enemy, damage or loss result to a ship, cargo, or men, indemnification for it is made in accordance with the regulations concerning general and common average. On the same basis rewards are given for brave defence, and for those killed or wounded.

1051. If a ship, by reason of bad weather or thick fogs, or other unavoidable cause, be withdrawn from the defence, she does not pay to those sailing with the defence, in case of misfortune befalling them. Similarly no indemnity for the damage, detriment, or loss which she suffers is chargeable to the common account.

## SECTION III.

### *On Piracy and the Right of Defence.*

1052. Whoever, in a haven or harbour, on (inland) waters or on the seas, makes an attack on a ship and pillages it, is tried and punished on the basis of the rules laid down in Art. 1630 of the Penal Code (1866 ed.).

1053. If a master forgets his duty, and induces his seamen voluntarily to make a raid or attack on a place on the seaboard, he is tried and punished according to Art. 1633 of the Penal Code (1866 ed.).

1054. If a merchant ship, without the knowledge and orders of the military or civil authorities, makes a raid or attack on a

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place on the sea-board or on another ship, this, even in time of war, is considered piracy and violence.

1055. It is not reckoned piracy, if a master who has run short of provisions on a voyage not by his own default and who is in extreme necessity, takes from another ship which he meets the necessary quantity even by force, if he observes the rules laid down for this case. (Arts. 1063-1067.)

1056. If the enemy or a pirate attacks a ship, in any place, the master must, without the cognisance of the authorities, defend himself with all his might; and if in such a case the master captures the ship or vessel of the attacking party and makes prize of it, he must bring it and all the booty, without meddling with it, into port, and hand it over to the prize commission, or to a Russian war vessel should he meet with one, and for his bravery he has a right to demand a reward according to the Naval Regulations (*i.e.*, he is entitled to prize money).

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## BAHIA BLANCA.—PORT BELGRANO.

THE following information respecting Port Belgrano, originally derived from remarks furnished by Captain N. Bowden-Smith, R.N., H.M.S. *Amethyst*, 1883, is now published by the Hydrographic Office, Admiralty, with additions and corrections by Captain W. J. L. Wharton, H.M. surveying vessel *Sylvia*, 1883.

Port Belgrano, formed in the bight of El Rincon, is the first port southward of the Rio de la Plata, and extending 38 miles inland ends in a small creek. Surveyed by Captain R. Fitzroy, of H.M.S. *Beagle*, in the year 1833, this port has been visited by few vessels, but has recently derived considerable commercial importance.

H.M.S. *Amethyst*, drawing 19 feet, and H.M.S. *Rambler*, drawing 13½ feet, entered Port Belgrano in the month of December, 1882.

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The *Amethyst* anchored about a mile below point Cigueña, about 23 miles from No. 1 buoy at the entrance. The *Rambler* proceeded to the inner port of Bahia Blanca, about 14 miles farther on.

The banks at the entrance have undergone some alteration since Captain Fitzroy's survey. From Punta Alta to Naposta River, a distance of 9 miles, the channel has undergone considerable change, and no vessel drawing more than 10 feet should navigate this part without the assistance of a pilot.*

*Buoyage.*—The Gateway or main channel leading to Port Belgrano has a depth of 4¼ fathoms at low water, and has been buoyed by the Argentine Government.

There are seven buoys placed in the channel leading to Port Belgrano. The first buoy, entering from seaward, is in lat. 39° 12′ S., long. 61° 39′ W., and bears S. by E. ½ E., 13¼ miles from Mount Hermoso; it is moored in 5¼ fathoms, painted yellow, and marked No. 1. in black figures. The buoy is conical, about 11 feet out of water, and is visible in clear weather from a vessel's deck at a distance of 5 or 6 miles.

The other buoys are painted red, and numbered 2 to 7 in white figures.

Nos. 3, 4, 5, and 6 buoys should be in line with each other and with the tripod, bearing N. 52° W. This is a good guide to ascertain if these buoys are in position. No. 7 buoy is a little to the eastward of this line. Half-a-mile north-westward of No. 6 the channel is at its narrowest, and care must be taken to keep on the course N.W. from that buoy.

*Directions.*—The best time for entering is near low water, as the channels between the mud banks can then be seen; and guided by the buoys no difficulty is experienced, but it should be observed that a heavy sea prevails with S.E. winds.

In clear weather, if the vessel's position shall have been correctly ascertained, she may steer for the yellow buoy; otherwise endeavour first to site Mount Hermoso, which is situated on the north side of Bahia Blanca, and is a small, conical, bare looking

* The channel from No. 1 buoy to Punta Pipa was partially resounded by H.M.S. *Sylvia*, 1883.



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mound, 120 feet high, with a rough spar on its summit. This is not easy to make out, but will appear as the left extreme of the land when seen from the south-eastward.

Avoiding the eastern edge of North bank, pass the yellow buoy close to on the port-hand, and steering N.W. by W. ½ W., allowing for drift, will lead to No. 2 buoy, thence N.W. ¾ W. from buoy to buoy on the port-hand in not less than 4¼ fathoms water.

After passing No. 4 buoy the wreck of a vessel (formerly intended for a light-vessel, but which broke from her moorings) will be seen on the East Gate-post, and as her two lower masts are still standing, she forms a useful mark. The wreck in line with Mount Hermoso bears N.E. ¼ E.

Pass about 30 yards north-eastward of No. 5 buoy, and westward of the wreck, and having arrived at No. 6 buoy, a tripod will be seen on a sandhill to the westward of Nameless Point. A bearing of the tripod will assist if No. 7 buoy be not seen; but it should be seen if in position.

Arrived off No. 7 buoy, the vessel will be clear of the narrow channel, and will have entered Port Belgrano: a W. by N. course should then be steered up the harbour, passing half a mile north of No. 8 buoy (distant 9 miles from No. 7) and about three-quarters of a mile off the north shore, in not less than 7 fathoms.

*Anchorage.*—The *Amethyst* found good anchorage in 12 fathoms, sand and mud, about one mile below Point Cigueña, and one mile from the north shore of the port. In this berth the tides ran from one to four knots an hour. It is recommended to moor with a good scope of cable.

*Light.*—A fixed white light is exhibited from the mast on Mount Hermoso, and is reported to be visible from 7 to 15 miles.

Channel to Inner Port.—No. 9 buoy bears W. by N. ¾ N. from No. 8, which is a little over a mile south of Cigueña point. The line joining these buoys leads over the northern edge of the banks on the south side of the channel, extending about 1¼ mile eastward of No. 9, in three fathoms. From a position about half-a-mile northward of No. 8 buoy, a course W. by N. ½ N. should be steered, passing just northward of No. 9 buoy, which is close to the edge of the shoal. This part of the channel and onward

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requires caution, and a vessel should not attempt it on a falling tide. From No. 9 buoy steer W. by N. ¼ N. with the pole on Punta Pipa on the port-bow until a clump of trees near the Naposta River is seen between the East and West Entrance posts, about one-third of the way from the former to the latter, when the trees must be steered for on a N.W. by N. ¼ N. course, passing between the above two posts which mark the entrance of the narrow channel to the inner port of Bahia Blanca.

These posts are about 30 feet high and supported by wire stays; the east post has a small triangle on it. Thence, the east of the channel is marked by posts which, if passed at about 80 yards distant, will lead in 14 feet at low water until abreast of Naposta River, where, extending across the inlet, there is a bar with only 7 feet at low water on its deepest part. At high water there are depths of 17 to 20 feet on the bar, and vessels drawing 19 feet have passed over the bar.

*Anchorage.*—Having crossed the bar, keep in mid-stream, steering W. by N. ¼ N. and moor in about 4 fathoms at low water at a convenient distance from the railway pier.

Bahia Blanca is the name given to a town about 5 miles to the N.N.W. of the entrance of Naposta River; the town has a population of 2,000. A railway to join Bahia Blanca with Buenos Ayres was expected to be opened November, 1883; the terminus, named Puerto Nuevo, being at a pier one mile W. by N. from the low-water entrance of the Naposta. There is a depth of 19 feet at low water at the pier; vessels can lie alongside. For half a mile on either side of the pier, good anchorage with smooth water will be found.

There is a powerful tug stationed here.

*Supplies.*—Fresh beef and other provisions can be obtained; also fish by the seine. Deer, ostriches, partridges, and a bird like a small crested guinea fowl, are to be found in the neighbourhood.

*Winds.*—The prevailing wind is N.W., which blows very strong, but this wind is local and seldom extends far to seaward. When the N.W. wind has blown for some days it shifts to S.W. and S.E., which winds sometimes blow with great strength. Thick fogs and heavy dew are experienced with N. and N.E. winds.



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*Tides.*—It is high water, full and change, at Port Belgrano at six hours; springs rise 16 feet; neaps 13 feet. The rise of tide, however, is much influenced by the wind, N.W. winds lowering the level, S.E. winds raising it.

*Bearings Magnetic. Variation*, 11° 50′ *E.*

## PORT OF MONTREAL.

COMPARATIVE statement showing the dates of the opening and closing of navigation, first arrival from sea, and the last departure for sea, during the past ten years :—

| Years. | Opening of Navigation. | Close of Navigation. | First Arrival from Sea. | Last Departure for Sea. |
|---|---|---|---|---|
| 1874 | April 25 | December 13 | May 11 | November 21 |
| 1875 | May 3 | November 29 | ,, 9 | ,, 22 |
| 1876 | April 27 | December 10 | ,, 8 | ,, 23 |
| 1877 | ,, 17 | Jan. 2, 1878 | April 29 | ,, 24 |
| 1878 | March 30 | December 23 | ,, 20 | ,, 24 |
| 1879 | April 24 | ,, 19 | May 1 | ,, 24 |
| 1880 | ,, 17 | ,, 3 | ,, 2 | ,, 23 |
| 1881 | ,, 21 | Jan. 2, 1882 | April 29 | ,, 23 |
| 1882 | ,, 11 | December 9 | May 6 | ,, 21 |
| 1883 | ,, 27 | ,, 16 | ,, 5 | ,, 20 |

## RECENT IMPROVEMENTS IN SHIP SIGNAL-LIGHTS.

(*Communicated.*)

IN the June number of the *Nautical Magazine* there appeared an article under the above-named title. The writer, from his extensive experience in matters relating to lighthouse illumination, is well able to discuss the question of ship signal-lights. His object is to impress upon shipowners the advantages of using the very best lights so as to lessen the loss of life and property at sea. He advocates the adoption of the electric light in signal-lamps as well as in light-

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houses; but the question of the superiority of the electric light over mineral oil is still a matter of dispute. Mr. Kenward is perfectly correct in pointing out the superiority of mineral oils over vegetable oils for use in signal-lamps. He most unmercifully condemns the use of the ordinary dioptric lenses, which he styles *pseudo* dioptrics; and nothing less than the true dioptric lenses will satisfy him. It is granted that such lenses will give the very best results—all other things being equal; but their cost must preclude their use except in first-class vessels; and it would not do to insist on their general adoption.

The object of the present paper is to show that recent improvements have been made in ship signal-lamps of the ordinary type for burning mineral oils, which have raised them to a pitch of excellence, quite equal to those of the highest class with the true dioptric lenses.

The makers of ship signal-lamps are confined as to size, shape, and other particulars by the Regulation of the Board of Trade; and whatever improvements they may make must be in accordance with these regulations—some of which might be altered with advantage. For instance, if, instead of saying that a certain size of burner or wick shall be used, it stated that the initial light—the light of the interior lamp when detached from the lantern case—shall be of a given candle-power, it would lead to the general improvement of signal lights; because there are many burners in use which fulfil the regulations as to the size of wick, but which do not give light enough for safe navigation.

The improved signal-lamps, known as Blake's Patents, are deserving of consideration. They are constructed to burn mineral oils only. In outward appearance they are like the usual signal-lights, having a plain or ordinary dioptric glass on the outside. It is, however, the interior lamp that calls for particular attention. The burner is a duplex, and is made vapour tight, so that no vapour can escape to take fire or form an explosive compound. The burner supports a cylindrical dioptric lens which is round the flame, and a metal chimney surmounts the lens; the whole being firmly fixed to the oil vessel by suitable attachments. These arrangements concentrate and reflect the light so as to produce an

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extraordinary brilliancy never before obtained in similar lamps; and the ventilation is such that no draught can act upon the burner or flame to extinguish it in the most violent gales. These lamps will burn any mineral oil, from the ordinary petroleum of commerce to the heavy oils, having a flashing point of 240° to 300° Fahr., and which are known as "Marine Safety," "Mineral Colza," and "Mineral Sperm," &c. All imperfections in the lamps have been overcome, and they burn equally well in all weathers. The initial light given by the duplex burner is 40 candles for a gallon of oil during 60 hours' burning.

Mr. Kenward, in his paper, gives certain data or facts to show the superiority of his lamps with the true dioptric lenses. In them he uses a duplex burner which, he says, gives an initial light of 25 standard candles. In Blake's Patent Lamp the initial light is 40 standard candles from a duplex burner, and the dioptric compound chimney. The red light of the port lamp with the lens is stated to be brightly visible in ordinary weather at three-and-a-half miles; and the green light for its own proportionate distance. In 1880 two red signal lights, Blake's Patent, were fixed on the new pier at Hythe, near Southampton, and the chairman of the pier company reports that they can be clearly seen in ordinary clear weather at Calshot Castle, a distance of about five miles. In 1882 two of Blake's Patent Harbour Lights were supplied to the Natal Government. They were specified to give a green light visible five miles away in clear weather. The lamps were no larger than the usual steamer's mast-head lights, having a 10-inch outside dioptric lens. No complaint has ever been made of their not fulfilling the conditions of the specification; but an additional order for another lamp like the first was received this year. Mr. Kenward states that the mast-head light of the *Valetta* steamship of the P. and O. Co., is powerful enough to be brightly visible about eight miles away. This light has of course the true dioptric lens. A mast-head light, with the 40-candle interior lamp, and a plain outside lens in the lantern frame, has been seen on the mast-head of one vessel from the bridge of another vessel, shining brightly the moment the light appeared above the horizon. This would give the distance

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of about ten miles. Ever since the winter of 1880-81, Blake's Patent Signal-lights have been in use on the Liverpool pilot boats. Captain J. Wall, of the steamship *Dominion*, of the Dominion Line, who is endeavouring to bring out his Universal Code of Night Signals, stated to the writer that the first time he returned to Liverpool at night, after these lamps were on the pilot boats, he saw the pilot's light, as he thought, about four miles away; but, though he was steaming at the rate of about twelve miles an hour, he was just fifty minutes after seeing the light before he came up to it; he therefore calculated that the light was from nine to ten miles away when he first saw it.

In these cases, then, the lights have been fully equal, if not superior to the lamps with the true dioptric lenses or lenticular glasses. In the case of the coloured lights, green and red, the best pseudo-dioptric lenses were used that could be obtained, in addition to the dioptric chimney of 40 candle-power; and if the true lenses had been used, the lights would, no doubt, have been far more brilliant and powerful. But are such lights necessary? We think not; for with green and red lights to be seen five miles away in clear weather, and with the white lights to be seen eight to ten miles off, navigation both on the ocean and in the crowded channels ought to be, with proper attention to the lights and a good look-out, perfectly safe as far as the lights are concerned.

Another thing which Mr. Kenward advocates is the equal, or nearly equal, visibility of the three lights of a steamship, or the two lights of a sailing vessel. An approximation might be made to this by adopting the 40-candle interiors into the side lamps, and letting the mast-head lights retain the burners at present in use. But we fail to see any reason against making the mast-head light powerful enough to be seen as far as the vessel is visible. The more powerful the mast-head light the more penetrating it will be in misty weather, and the more likely to be seen so as to avoid collision.

The prejudice against the use of mineral oils still has a strong hold on the minds of some shipowners on account of its supposed danger. With ordinary care there is no danger.

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The oil of itself is as inexplosive as spring water; and sound, galvanised iron tanks for its storage can easily be had. The heavy mineral oils before named are to be obtained in abundance, having a flashing point of 240° to 300° Fahr. Since gas is out of the question for use at sea, it remains for a choice to be made between mineral oils and the electric light. Leaving out the question of cost altogether, which is more to be depended on, and which is the better for misty or foggy weather? Mr. Kenward admits that the electric light cannot be depended on, for he wants a mineral oil lamp to be always kept ready for use in case the electric light goes out. The investigations now going on at the South Foreland, as to the relative values of the electric, gas, and mineral oil lights for lighthouse purposes, have not yet proved that the best light of the three for foggy or misty weather is the electric light.

Q. E. D.

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## GEOGRAPHICAL NOTES.

THE following extracts from the opening address of General Sir J. H. Lefroy, R.A., C.B., President of the Geographical Section of the British Association, at the meeting of the Association lately held at Montreal, in Canada, will interest most of our readers:—

"Canada comprises within its limits two spots of a physical interest not surpassed by any others on the globe. I mean the pole of vertical magnetic attraction, commonly called the magnetic pole; and the focus of greatest magnetic force, also often, but incorrectly called a pole. The first of these, discovered by Ross in 1835, was revisited in May, 1847, by officers of the Franklin Expedition, whose observations have perished, and was again reached, or very nearly so, by McClintock in 1859, and by Schwatka in 1879: neither of these explorers, however, was equipped for observation. The utmost interest attaches to the question whether the magnetic pole has shifted its position in fifty

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years, and although I am far from rating the difficulty lightly, it is probably approachable overland, without the great cost of an Arctic Expedition. The second has never been visited at all, although Dr. R. Bell, in his exploration of Lake Nipigon, was within 200 miles of it, and the distance is about the same from the Rat Portage. It is in the neighbourhood of Cat Lake. Here then we have objects worthy of a scientific ambition and of the energies of this young country, but requiring liberal expenditure and well-planned efforts, continued steadily, at least in the case of the first, for, perhaps, three or four years.

"This is perhaps a proper occasion to allude to a novel theory proposed about two years ago, with high official countenance, upon a subject which will never cease to have interest, and perhaps never be placed quite beyond dispute. I mean the landfall, as it is technically called, of Columbus, in 1492. The late Captain G. V. Fox, of the Admiralty, Washington, argued in a carefully-prepared work, that Atwood's Key, erroneously called Samana on many charts, is the original Guanahari of Columbus, renamed by him S. Salvador, also that Crooked Island and Acklin Island are the Maria de la Conception of Columbus and the true Samana of succeeding navigators in the sixteenth century. The last supposition is unquestionably correct. Crooked, Acklin, and Fortune Islands, which from the narrowness of the channels dividing them may have been, and very probably were, united four centuries ago, are plainly the Samana of the Dutch charts of the seventeenth century, and are so named on the excellent chart engraved in 1775 for Bryan Edward's 'History of the West Indies,' but the view that Atwood's Key is identical with Guanahari is original, and is neither borne out by any old chart, nor by Columbus's description. This small island is conspicuously wanting in the one physical feature by which Guanahari is to be identified '*una laguna en medio muy grande.*' There is no lake or lagoon in it, nor does its distance from Samana tally at all with such slender particulars as have been left us by Columbus respecting his proceedings. The name S. Salvador has attached, not to Atwood's Key, but to Cat Island, one of the Bahamas; it is true that modern research has shifted it, but only to the next island, and on very good grounds.

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Cat Island is not *muy llana*, very level; on the contrary, it is the most hilly of all the Bahamas, and it has no lake or lagoon. Watling Island, a little to the south-east of Cat Island, and now generally recognised as the true Guanahari or S. Salvador, is very level; it has a large lagoon, it satisfies history as to the proceedings of Columbus for the two days following his discovery, by being very near the numerous islands of Exuma Sound, and I think few impartial persons can doubt the justice of the conclusion of the late Admiral Becher and of Mr. Major as to its identity; there are difficulties in the interpretation of Columbus's log on any hypothesis, but there is one little 'undesigned coincidence' which to my mind goes far to carry conviction. Columbus, when he sighted land, was greatly in want of water, and he continued cruising about among the small islands in search of it for some days. Clearly, therefore, the *laguna* on Guanahari was not a fresh-water lake; nor is the lagoon on Watling Island fresh water, and so it exactly meets the case.

"The report of Lieut. Raymond P. Rodgers, of the United States Navy, on the state of the canal works at Panama so lately as January 25 last, which has doubtless been eagerly read by many present, leaves me little to say on that great enterprise. Perhaps the following official returns of the amounts of excavation effected in cubic metres (a cubic metre is 1·308 cubic yards) will enable the audience to realise its progress:—

| | | Total excavated | In each month |
|---|---|---|---|
| 1883 | October ... ... | 2,042,034 ... ... | |
| 1883 | November .. | 2,375,534 ... ... | 333,300 |
| 1883 | December... ... | 2,760,534 ... ... | 385,000 |
| 1884 | January ... ... | 3,340,534 ... ... | 580,000 |
| 1884 | February ... ... | 3,974,191 ... ... | 633,657 |
| 1884 | March ... ... | 4,590,022 ... ... | 615,831 |

"The total quantity of excavation to be done in a length of 46·6 miles is estimated at 100,000,000 cubic metres, but the rapid augmentation of quantity shows that the limit has not been attained. This is no place to speak of the stimulus given by this great work to mechanical invention or the gigantic power of the

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machines employed, which will probably receive attention in another Section, but I may mention the two great problems which still await solution. The first is how to deal with the waters of the River Chagres; the second is how to manage a cutting nearly 400 feet deep (110 m. to 120 m.). The Chagres is a river as large as the Seine, but subject to great fluctuations of volume; it cuts the line of the canal nearly at right angles, and for obvious reasons it is impossible to let it flow into it. It is proposed to arrest the stream by an enormous dyke at Gamboa, near the divide. It will cross a valley between two hills, and be 1,050 yards long at the bottom, 2,110 yards at the top, 110 yards thick at the base, and 147 feet in greatest height. Out of the reservoir so constructed, it is proposed to lead the overflow by two artificial channels, partly utilising the old bed. The cutting will be nearly 500 feet wide at the top (150 m.), with the sides at a slope of $\frac{1}{1}$. It is proposed to attack it by gangs or parties working on twelve different levels at the same time, one each side of the summit, dividing the width at each level into five parallel sections. Thus there will be 120 gangs at work together, and it is confidently hoped that the whole will be really finished in 1888, the date long since assigned for its completion by M. de Lesseps. There is practically no other project now competing with it; for the proposed routes by the Isthmus of Tehuantepec, the Atrato, and San Blas, may be regarded as almost universally given up; both the latter would involve the construction of ship tunnels on a scale to daunt the boldest engineer. The so-called Caledonia route has not stood the test of examination. There remains but the Nicaragua route, and this, while practicable enough, has failed to attract capitalists, and is environed by political and other difficulties, which would leave it, if completed, under many disadvantages as compared with its rival. Among the latter must be named the necessity for rising by locks to the level of the Lake of Nicaragua (108 feet).

"Before I resume my seat I cannot deny myself the pleasure of alluding to that important measure of social reform, so simple in its application, so scientific in its basis, for which you are indebted to the perseverance and enthusiasm of my friend Mr. Sandford

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Fleming, C.E. I mean, of course, the agreement to refer local time on this continent to a succession of first meridians, one hour apart. There are many red-letter days in the almanac of less importance than that memorable November 18, 1883, which saw this system adopted, whether we consider its educational tendency or its influence on the future intercourse of unborn millions. It is a somewhat memorable evidence also that agreement upon questions of general concern is not that unattainable thing which we are apt to consider it. The next step will not be long delayed; that is the agreement of the civilised world to use one first meridian—Paris, Ferrol, Washington, Rio de Janeiro, gracefully, as I venture to hope, giving that precedency to Greenwich which is demanded by the fact that an overwhelming proportion of the existing nautical charts of all nations, and of maps and atlases in most of them, already refer their longitudes to that meridian; no other change would be so easy or so little felt."

## THE "NISERO" AFFAIR.

THE recent announcement of the release of the *Nisero* crew after their long captivity in Tenom has doubtless been received with satisfaction by all persons who have had to deal with what has proved a most unfortunate piece of business. Apart from the sufferings and privations endured by the men, the affair is in all respects to be regretted. It has been from the first a troublesome and embarrassing incident for both the English and Dutch Governments; and even the final solution of the difficulty and the release of the prisoners has been attended by conditions which afford some grounds for regret, at least so far as this country is concerned. At the same time the affair serves one useful purpose, since it throws a strong light upon our commercial relations with Sumatra, and brings into clear relief the influence which the present policy of the Dutch is exerting in that part of the world. Looking to the importance of the case in this respect we think it may be useful briefly to summarise its main incidents.

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On the 8th November, 1883, the steamer *Nisero*, owned by Messrs. Pinkney and Sons, of Sunderland, became stranded on the west coast of Acheen. The master and crew escaped from the wreck, but were at once taken prisoners by the Rajah of Tenom to be held as hostages for the purpose of coercing his Dutch neighbours. At the first glance this may seem a roundabout method of procedure; but upon a closer examination it will be seen that the Rajah was not altogether a simpleton in the affair. On hearing of the disaster, the Governor of the Straits Settlements at once despatched H.M.S. *Pegasus*, with Consul Kennedy on board, for the purpose of rendering assistance. The *Pegasus* arrived upon the scene, but only to find the vessel plundered and destroyed, and twenty-five of the crew prisoners, the master having escaped to a Dutch man-of-war, and the second engineer and a Chinese cook having been permitted to leave. On the arrival of the *Pegasus*, the Rajah assumed a hostile attitude, threatening that if a shot were fired all the captives would be murdered. Matters, therefore, came to a dead lock. On the 20th December the English Foreign Office proposed to the Dutch Government that the Governor of the Straits Settlements should be authorised to treat directly with the Rajah for the release of the prisoners; but the reply to this was that the Governor of Acheen had already submitted a reasonable ultimatum. The Dutch authorities, at the same time, requested that the British man-of-war might be withdrawn, urging that its presence rendered the negotiations more difficult. The *Pegasus* was, therefore, ordered to leave.

Negotiations having been opened between the Dutch and the Rajah, the drift of the policy which the latter had in view at once became apparent. He demanded a ransom of 200,000 dollars, the opening of his ports to free trade, and a guarantee from England that the Dutch should not close them at any future time. The emissary offered the ransom asked, and proposed that the Rajah should be allowed to export a large quantity of pepper then lying in different ports within his jurisdiction; but the guarantee was stated to be quite out of the question. In the meantime a military expedition was despatched from Acheen, and on the 6th January, 1884, a number of villages were burnt, and the coast blockaded by

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a Dutch gun-boat. This step, however, proved of no avail, the only result being that the prisoners were marched away inland. In February, Mr. Maxwell, as an agent of the Governor of Singapore, was authorised by the English Government, with the approval of the Dutch, to open negotiations. In the course of these it became perfectly clear that unrestricted trade was the main object the Rajah had in view, and that by keeping a firm hold on his prisoners he hoped to be able to enlist the British in his cause. Mr. Maxwell obtained a written statement of the Rajah's demands; and in this document the conditions relating to the opening of certain ports was placed before the question of a cash ransom. The amount of the latter was however raised to 400,000 dollars, on the ground of the damage done by the Dutch in the course of their recent military operations. The Rajah also demanded a supply of arms and ammunition. With none of the conditions then specified were the Dutch willing to comply. For the purpose of confining the general trade of Acheen to the ports which were under their own control they had decreed in May, 1883, that certain portions of the coast should be closed; and the ports of Tenom and Pangah, specially mentioned in the Rajah's stipulations, were among the places to which this decree applied. As the Rajah of Tenom, like other chiefs of districts, had previously enjoyed a monopoly of the export trade in his own province, it is easy to understand his anxiety to have this restriction removed; while the unwillingness of the Dutch to comply is equally clear. Their policy of confining trade to a few ports only was ostensibly dictated by an anxiety to prevent the importation of arms and ammunition; but it is not improbable that the wish to strengthen their own somewhat uncertain footing in Acheen, and at the same time to weaken the position of the local chiefs also had its influence in the matter.

On the 29th April, Earl Granville addressed a despatch to the Netherlands Minister in London, strongly urging that the British Government should be allowed to act as mediators for the purpose of securing the release of the men, and of obtaining a settlement of the differences that had arisen between the Rajah and the Netherlands authorities, but without success. The Ambassador, in

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his reply, maintained that the original cause of the difficulty was the non-payment of an amount owed by a Chinese merchant for pepper purchased by him from the Rajah, that the question of opening his ports to trade was only an afterthought, and that it was the hasty interference of the English authorities at the outset which had induced him to make his present extravagant demands. It was at the same time hinted that the loss of the *Nisero* had been the result of a criminal design—a suggestion, by the way, for which there seems to be no kind of foundation. On the 31st May, Earl Granville repeated his proposal, urging that the commercial restrictions imposed by the Dutch was the real source of the difficulty, and pointing out that these were altogether contrary to the stipulations of the Treaty made with this country in 1824.

While these negotiations were in progress the *Nisero* captives were enduring great privations. The British man-of-war succeeded in sending them some provisions, and letters were received from certain of their number; but by the end of June it was ascertained that four of them were dead, others being sick of cholera. The Rajah had moreover adopted a less friendly tone in his communications with the English, openly stating his conviction that they were altogether inferior to the Dutch, and hinting that if hostilities were continued against him by the latter he would be unable to answer for the safety of the men. In concluding a written message to Mr. Maxwell, he requested that no more letters might be sent to him, as he "knew that the counsels of the English were at an end."

Early in July the Netherlands Government proposed to blockade the entire coast of Acheen for the purpose of inducing the whole population of the country to put pressure on the Rajah for the release of the men; but to this the English Foreign Office made an alternative proposal that a joint mission should be despatched for the purpose of threatening reprisals by both Powers unless the men should be restored by a given day. This course the Netherlands Government agreed to adopt; and on the 26th July the British authorities, in the Straits Settlements, were advised by wire that a joint ultimatum was to be sent to the Rajah, the terms being, that if he released the crew by a given day and submitted to Dutch rule, the blockade of his ports would be removed, the

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restrictions on trade withdrawn, and a ransom of 100,000 rupees paid. If he refused, the British and Dutch forces would at once combine to punish him and his people. To this demand the Rajah yielded, and on 3rd September the whole of the men left alive were released. These were eighteen in number, seven of the twenty-five originally taken prisoners having died during their captivity.

We suppose that the country has now heard the last of this most painful and unsatisfactory affair. It is impossible, however, to trace out the history of the case amidst the maze of despatches to which it has given rise without coming to the conclusion that the Dutch have displayed a considerable degree of acumen in utilizing the incident to their own advantage to the greatest possible extent. Constantly on their guard against anything like independent action on the part of the English, they finally succeeded in using the moral support of this country for the purpose of compelling the Rajah to submit to themselves. We do not mean to imply that this result could have been avoided. Independent action on our part was impossible without coming to an open rupture with the Netherlands —a contingency which, it is needless to say, would only have made a bad matter fifty times worse. But on the other hand the commercial advantages to be derived from an extension of the Dutch jurisdiction in Sumatra are somewhat doubtful. Of late years Dutch policy in Acheen has certainly not been attended by very satisfactory results. The long and desultory kind of warfare which they commenced with the Achenese in 1872 seems to have done little more than to arouse against them the bitter hatred of all classes of the native population. Indeed, so strongly does this feeling run that their officials cannot live on shore without a strong guard, while any native chief or Rajah who becomes at all dependent on them for support, is shunned by the rest of his countrymen. Although the Dutch profess to have conquered Acheen, they live as it were in a state of constant siege, their influence being practically limited to the range of the guns in their stockades and forts. They seem unable to subdue the country by physical force, and still less by moral persuasion. In the midst of all the animosity they have aroused, trade naturally languishes, and although certain inconveniences attended

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the old system which gave the native chiefs the control of all export business in the districts over which they ruled, it may be questioned whether this was not on the whole preferable to the state of things the Dutch have succeeded in establishing.

The only satisfactory feature in the present case is the removal of the trade restrictions imposed by the Dutch in 1883. In the treaty made by them with this country in 1824, it was stipulated that in no case should an impediment be placed upon "a free communication of the natives in the Eastern Archipelago with the ports of the two Governments respectively, or of the subjects of the two Governments with the port belonging to the native Powers." The restrictions of 1883 were clearly opposed to the spirit of this undertaking, and ought never to have been framed.

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## CORRESPONDENCE.

### STAR OBSERVATIONS AT SEA.

*To the Editor of the "Nautical Magazine."*

Sir,—Recent numbers of the *Nautical Magazine* contain papers and letters on the above important subject, which give many valuable hints suggested by practical experience. They also, very properly, advise all navigators to make themselves thoroughly conversant with the various methods of obtaining a ship's position by stellar observations. It is certainly not going beyond the truth to say that observations of stars made with a clear horizon in the twilight furnish the most accurate method of determining a ship's position with which we are acquainted. You will, perhaps, therefore, permit another observer to supplement the hints already brought before your readers by others of which he has found the practical importance.

Mr. Barker (in your August number) has called attention to the one serious drawback to star observations, viz., the errors of observation which occur in unfavourable circumstances; and there is little doubt that it is owing to the difficulty of avoiding these errors that many navigators, who have given star observations only an



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occasional trial, become disgusted with them, and give them up as useless and misleading. My object in this letter is to point out the varying circumstances under which star observations are valuable, and how these circumstances affect the reliability of the results obtained, and also to supplement Mr. Barker's suggestions for the elimination of the effects of errors of observation.

The circumstances under which star observations are most valuable occur when navigating a vessel from port to port along a coast line which does not present many good landmarks; where the direction and rate of the currents are variable, and therefore not accurately determined; and when the weather is fine and settled.

This description is peculiarly applicable to the coasts of the Bay of Bengal in the N.E. monsoon, though nearly every navigator will be able to recall, in one part of the world or another, a similar condition of things. When exposed to currents of unknown rate and direction, it is obviously impossible to rely upon results obtained by observations of only one heavenly body, *e.g.*, the sun, because the time observations are dependent upon a latitude deduced from the noon observations, and this is vitiated by an unavoidably inaccurate D.R. In the twilight, on the other hand, it is nearly always possible to observe some stars for latitude, and others for time, within the course of a few minutes, and so to avoid all inaccuracies of D.R.

Another advantage of twilight observations, especially important in tropical seas in the neighbourhood of land, is that the horizon is less affected by mirage then than at any other period of the twenty-four hours. It is a matter of common observation among seamen that land is more easily "picked up" in the twilight than at any other time; and it seems to stand to reason that the atmospheric conditions which render it difficult to see land which is nearly "awash," must also have the effect of rendering it difficult to determine the true position of the horizon.

But granting for the sake of argument that, under the circumstances mentioned above, the ship's position could be accurately determined for noon in the usual way, it would still be very desirable to make a practice of determining the position both in the early morning and late evening; for in a run of say only twelve hours,

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the difference between no current, and a current of 1·5 knots per hour, is 18 knots, and that amount of error in the ship's position, when making for a small port on a flat coast line is sufficient to cause both worry and loss of time.*

The set of circumstances which comes next in importance differs widely from the last. In high latitudes in the winter, when the sun at noon only attains an altitude of 10°—15° it is almost impossible to obtain the time at all accurately by solar observations. If the time observations are not made before the sun has obtained an altitude of 5°, they are, owing to mathematical considerations, of slight value. But there is often a bank of cloud hanging about the horizon which obscures the sun until it has an altitude of 10° or 12°, though the sky may be almost cloudless at higher altitudes; and even if the sun is visible and bright when as low as 4° or 5° alt., everyone who has tried to take observations under such circumstances knows that with the glare of light on the objective of the telescope it is very difficult to observe a contact accurately, and when a rough sea further complicates matters, impossible. But under these circumstances it not unfrequently happens that there are abundant opportunities of observing stars or planets with altitudes of from 30° upwards, and inasmuch as an error of say 3′—5′ (of arc) in the altitude of a rapidly rising star (near the prime vertical) would produce a smaller error of time than an error of 1′ of arc in the altitude of the slowly rising sun, star observations in these circumstances are of great value, especially as they can be made with much greater accuracy than those of the sun.

Star observations made on dark nights with an ill-defined horizon, or caught during partial breaks in the sky in bad weather, are liable

* While lying at anchor in roadsteads on the Coromandel coast, I have seen the current setting steadily for two or three days to the southward at about 1·5 to 2 knots an hour, and then, without any apparent cause becoming slack, and showing a slight set to the northward for a while. A vessel leaving port after being at anchor for several hours and experiencing a marked southerly current during that time, would naturally correct her D.R. for such a current after leaving, with the effect—probably—of getting a more correct estimate of her position, but also—possibly—a less correct estimate than if no allowance for current had been made. If she had to make her next port any time between midnight and noon, it is evident that her position could not be relied upon with certainty unless determined by careful star observations in the morning watch.



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to so many sources of error that they ought not to be relied on unless the results of a series of observations (in making which the precautions to be now mentioned have been observed) agree fairly well together.

PRECAUTIONS WITH REGARD TO TAKING THE OBSERVATIONS.—If evening twilight observations are intended, the approximate meridian altitudes of any stars or planets about to pass the meridian should be computed for the supposed latitude while it is still broad daylight, and the sextant set to a reading some 10′ greater than the expected altitude. The direct telescope should be used, and the horizon swept in the direction of the meridian. The star is thus seen against the dark background of the water, and it is surprising to find how easily and accurately by this means the altitude of a star even 50° or 60° in altitude can be obtained some time before the eye is at all able to distinguish the star when looking for it in the bright sky. In the Northern Hemisphere it "goes without saying" that the Pole star should always be attempted on these occasions. With regard to the time observations, if a second sextant is available, the observer, while looking out for his meridian observations, should keep casting his eye to the eastward and westward, and, as soon as he sees a bright star he should observe it, even though while making his observations he does not know what star it is, for as the sky darkens, he will be able to determine that point, though if he waited until (by other stars appearing) he was able to recognise any particular one, he would have missed the best chance of an accurate observation with a well-defined horizon.

Mr. Barker has pointed out (in the article above referred to) that in making observations in unfavourable circumstances, there is a tendency to acquire a more or less constant personal error by making either too strong a contact, or the reverse. The plan which he recommends of determining the amount of this personal error is very good, but it involves an amount of careful work, which many observers would not care to undertake, and it always leaves a good deal dependent upon the observer's judgment as to the nature of the existing circumstances—a plan which is obviously liable to error.

The plan which I would suggest is based upon the practice adopted in observatories of making constant errors (instrumental

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or otherwise) tell in opposite directions on different sets of observations. They thus expose one another, and in taking the mean of all the observations, counteract one another.

For this purpose stars should be observed for latitude both to the north and south of the observer, and the results compared; and similarly, for time, stars should be observed both in the eastward and in the westward; the supposition being, that in any particular series of observations extending over say a couple of hours the unavoidable error of observation will be about equal in amount for every altitude.

For example—suppose that for any reason an observer is making all his altitudes 10′ greater than the truth; it is obvious that if he observes a star to the northward the latitude will be 10′ too far north, and similarly if he observes a star to the southward the latitude will be 10′ too far south. The difference between the two results will be 20′ (a large discrepancy), but the mean of the two will be correct. One finds in practice in observing the meridian altitudes of a number of stars successively, some being to the northward and others to the southward, that all the southern stars will agree fairly well together, and all the northern ones, and yet the results of the southern and northern observations may be divergent to a considerable extent. It is therefore safe to adopt the following rule in making such a series of observations:—

Rule.—Take the mean of all the southern observations, and also the mean of all the northern observations, and the mean of these two means is the latitude.

For example, take the following set of observations:—

| North of Observer. | | South of Observer. | |
|---|---|---|---|
| Lat. by Pole star | 15° 16′ N. | Lat. by Star A. | 15° 8′ N. |
| | | ,, B. | 15° 7′ N. |
| | | ,, C. | 15° 2′ N. |
| | | Mean of stars to southward ... | 15° 4′ N. |
| | | Mean of stars to the northward | 15° 16′ N. |
| | | Mean of the above | 15° 10′ N. |

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It sometimes happens that all the stars passing the meridian about the same time, and available for sextant observation, are passing on the same side of the observer, *i.e.*, either north or south of him. If there is any reason to doubt the accuracy of the observations, even if the results of several observations on the same side agree fairly well together, an effort should always be made to get at least one observation on the other side as a check, and if it differs from the other results—as in the example given above—the single observation should have a value equal to the mean of all the observations taken on the other side.

The same remarks apply to observations for time, substituting east and west for north and south.

I trust that you will consider the importance of this subject a sufficient excuse for the length to which this letter has unexpectedly extended.

I am, Sir, your obedient servant,

ARTHUR E. NEVINS, F.R.A.S.,

Chief Mate (and Special Compass Deviation Examination).

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## COMPULSORY PILOTAGE.

*To the Editor of the "Nautical Magazine."*

Sir,—Some time ago you were good enough to publish a letter of mine on the subject of compulsory pilotage, which letter had reference more particularly to an article of yours on the same subject, which had pointed out various inconsistencies and anomalies in the law of the subject. Perhaps you will allow me to give your readers the benefit, from personal experience, of one more curious effect of the law. The other day I took passage in a steamer—there being four other passengers on board—from London to a port which lies "between Boulogne and the Baltic;" at least, it is one which a vessel bound to the Baltic must pass. We left London on a beautiful morning, and had a pilot of some sort on board. I did not concern myself with the question whether he was a Trinity pilot or a waterman, or whether his employment was compulsory or not; but, to assist anyone interested in solving that question, I may

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mention that the vessel on board which I was, was not registered in London. As we approached Gravesend, and were more or less critically observing an uncouth-looking ironclad vessel, flying the Brazilian flag, I was suddenly startled by receiving a most polite request to go down into the cabin till we were past Gravesend. As should be the case on board ship, my first impulse was to obey, which I did in common with the rest of the passengers, grumbling somewhat, and, so far as I was concerned, pondering the reason of the strange request. In a moment, however, I thought I had solved the difficulty. It must be that the captain thinks that, having passengers on board, he is bound to employ and pay a pilot; whereas, the weather being fine, and he himself, though not holding a pilotage certificate, being perfectly well acquainted with the channels leading into the North Sea, having been in the trade and made the voyage frequently, thinks it unnecessary, and prefers to save his owners the expense, and therefore wishes to conceal the alarming fact of having passengers on board. I had not any of the Law Reports at hand to satisfy myself whether, if such was his belief, it was well founded, and no one who knows anything of the law of compulsory pilotage would venture to say off hand whether it was so or not. However, to the best of my judgment, under the circumstances of the case, the captain was in error, and therefore I felt no difficulty in complying with his request, as though his intention might be the evil one of a breach of the law, in which he wished his passengers to be at once the unconscious instruments and accomplices, yet, as in fact, he was not breaking the law, and the time was not convenient for argument, I could be doing no harm in allowing him to save his owner's money in a legitimate manner, even if he thought his manner of doing so to be illegal.

The particular case, however, is not important; but I think the principle is. No doubt, in some cases, and more particularly if bound for an English port, a vessel on a comparatively short voyage must employ a pilot if carrying passengers, and need not do so if not carrying them. If such a vessel has only a few, say half-a-dozen, on board, and the passenger money is, say, £1 per head, the owner who complies with the law and employs a pilot has to pay, sup-

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posing his vessel to draw, say, 14 or 15 feet, from £8 to £9 to the pilot, and therefore is by reason of his passengers £2 or £3 out of pocket, and at present the difficulty can only be got over either by a bold breach of the law, and running the risk of its consequences, or else by the evasion of getting the passengers to sign the articles as nominally members of the crew, a course practically impossible where passengers perhaps only come on board when the ship is casting off. And I think every one will agree that some remedy should be found. Possibly the law might be altered by an Order in Council and without an Act of Parliament, so as only to require vessels *licensed* as passenger steamers that is, vessels which carry more than twelve passengers, to employ a pilot, or to adopt the same numerical test as that which renders a license necessary; that is to say, that pilotage should not be compulsory unless the ship had, in fact, twelve passengers on board. But I cannot say that either alternative is to my mind satisfactory, and I think that in these days the ordinary run of passengers and owners who wish to carry them to keep up the reputation of their ships for safety, without interference from the law, may be trusted to take care of themselves; and that passenger vessels, except perhaps those carrying emigrants or troops, where the passengers are not altogether free agents, and their preservation a matter of national concern, should be upon the same basis as other vessels, as was the case prior to the Merchant Shipping Act of 1854.

September, 1884. PALINURUS.

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## ELECTRIC LIGHT ON BOARD SHIP.

*To the Editor of the "Nautical Magazine."*

Sir,—This is a go-ahead age, and you have to travel pretty fast to keep even, letting alone being in advance of the times. Ships and steamers now are so large and well found that the ordinary dangers of bad weather and heavy sea are not regarded with so much anxiety as they were. What then is it that the seaman fears and dreads the most? There are few who will not agree with me when I say that it is the risk of collision which causes many sleepless nights and anxious moments, and

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though much has been done in this direction, still more remains to be accomplished, and on this most important point we are, I consider, very far from being even with the age. The plan I am about to advocate will, I expect, meet with much opposition from steamship owners on the plea of expense; but ought expense to weigh against risk of life, letting alone loss of most valuable property? Steamship owners, however, will be the only growlers, as sailing ships will not require to adopt the plan I propose. It is a fact of notoriety that the side-lights of vessels are of different brilliancy and power, many are very weak, and even when isolated are most difficult to distinguish, but when surrounded by all the other lights of our present brilliantly lighted up splendid passenger steamers, they are quite outshone and undistinguishable and, under the circumstances of dense smoke, as mentioned by "W. H. S. M." in your July number, could not even be seen, much less determined. What, then, is the remedy to prevent so awful a catastrophe as a collision between two steamers meeting each other at the rate of 30 knots an hour. I have had considerable experience during thirty-five years' sea service, though but half of that time has been in command, and having given much thought to the subject have come to the conclusion that the time has arrived when all steamers should be compelled by law to use the electric light in addition to the present regulation lights, but in the following manner:—In the middle of every bridge (or one on each side would be better) there should be a good electric lamp, fitted with a powerful and highly polished reflector, the whole to be on a universal pivot, so as to turn all round in every direction, and upwards or downwards if required to do so, also a screen to shut it off immediately when not wanted. With this light the officer of the watch could sweep round the horizon every few minutes or so, and be able with ease in ordinary weather to distinguish a vessel or boat from two to four miles distant, and determine to a certainty in what direction she was steering, besides other particulars as well, and while the Rules of the Road are observed collision would thus become impossible. I know objections will be raised among owners that the glare of a powerful electric light thrown on a vessel would dazzle those on board that vessel. This would, however, be but for a

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moment, and would not kill or do them any harm, on the contrary, by putting their backs to the light, they would be able to see any serious defect in their own sails or rigging, which might be of service to them, and as to two steamers dazzling each other, even if it were to be the case, which I doubt, the extra distance at which the electric light would be seen, would more than compensate, as being a far distant warning to look out for a steamer that was coming, and would soon have her ordinary regulation lights in sight, and each could screen off his lamp for a minute or two, and give the other an opportunity of having a good and careful look at the other. These lamps are used with great effect in the Royal Navy in searching for torpedoes or on an enemy's coast, why cannot they be extended to mail or merchant steamers?

I am, dear Sir, faithfully yours,

Southampton, September 7th, 1884. ZAZ.

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## REGULATIONS FOR PREVENTING COLLISIONS AT SEA, &c.

*To the Editor of the "Nautical Magazine."*

Dear Sir,—I have just received an official copy of "Regulations for Preventing Collisions at Sea," which are now in force.

I think the majority of my brother shipmasters and officers of the Mercantile Marine will, like myself, be disappointed to find little or no improvement on the old regulations.

Take Art. 8, which states:—"A ship, whether a steamship, or a sailing ship, when at anchor, shall carry, where it can best be seen, but at a height not exceeding 20 feet above the hull, a white light, in a globular lantern of not less than eight inches in diameter, and so constructed as to show a clear, uniform, and 'unbroken light,' visible all round the horizon at a distance of at least one mile."

Now this regulation lamp may be constructed to show a uniform and unbroken light. But on what part of a heavily sparred sailing ship can it be hung "to be visible" all round the horizon, bearing in mind the height must not exceed twenty feet above the hull.

I assert, with all due deference to the gentlemen who framed

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these rules, that to try and carry out this Article as it now stands, is and always has been, impracticable and dangerous.

Place the light in question wherever you choose, "in conformity with the Act," and you will find, on certain bearings, it will be obscured by the heavy lower masts and gear attached.

And to a steamer, coming up on those bearings on a dark, dirty night, there would be nothing to indicate a ship at anchor, thus dangerously increasing the risk of a collision.

My idea is, and always has been, that no one should criticise a thing unless they can suggest some improvement, and I now submit, for the consideration of the Board of Trade, the following simple remedy for this apparent defect in Art. 8:—

I propose that all ships at anchor should carry two fixed white lights in globular lanterns in the fore-rigging, one on each side of the ship at a uniform height from the hull, also a fixed bright light at the stern of all vessels of 300 feet in length or over. You would see at a glance then how a ship is riding, and under the most difficult circumstances one at least of the lights would be visible.

This plan would obviate the danger of a ship being without a light, which is frequently the case now, especially in dirty, squally weather, when the wind blows it out.

I think I have said sufficient to convince all who are interested, that, so far as Article 8 goes, we are still keeping all our eggs in one basket, and although many of us know it is absolutely dangerous to do so, still we are compelled by law to try an impossibility, and by so doing not only endanger the safety of the eggs, but of the basket as well.

I will now pass on to Article 18. It says: "Every ship, whether a sailing ship or steamship, shall in fog, mist, or falling snow, go at a moderate speed."

Now take two steamers crossing the Atlantic; one of them will steam nineteen knots, and the other can only go nine knots full speed. A dense fog comes on. The captain of the nineteen knot boat would consider he had complied with the meaning of the Act if he reduced speed to 9 knots, and no doubt would be exonerated if he collided with a sailing ship becalmed, "or any other object that could not get out of his way."

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What would be said to the captain of the 9-knot boat if he kept going at that speed, and got into trouble; of course the Nautical Assessors would condemn him for going full speed.

We all know that the officers on board a fast steamer cannot see further ahead through a fog, neither can they hear sounds at a greater distance than those on board a slow boat, therefore why should one be allowed to go any faster than the other.

The Act as it now stands is vague and dangerously misleading, and there will be no diminution of risks in thick weather until the wording of Art. 18 is entirely changed, and I repeat what I said in my letter to the *Nautical Magazine* in November last., viz., that safety should be the first consideration in foggy weather, therefore, in my opinion, the Art. in question should be worded as follows:—

Every ship, whether a sailing ship or steamship, shall, in fog, mist, or falling snow, go as slowly as possible, consistent with steerage way, speed not to exceed five knots, and when practicable to stop and anchor.

I enclose my card, and remain,

Dear Sir, yours, &c.,

London, September 1st, 1884. J. D.

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## BLUFF HARBOUR, NEW ZEALAND.

We reprint the following interesting letter from the pages of the *Shipping Gazette*:—

*To the Editor.*

"Sir,—I think it of some importance, now that direct steam communication between New Zealand and Britain has become quite an established fact, to point out to you the importance of knowing the merits of the nearest and most commodious and safe harbour for the conducting of a large portion of that traffic, and such a harbour, I believe, is to be found in Bluff Harbour. The 'Bluff Harbour' has in this country, I know, been regarded as unsafe by many who have listened to the most prejudiced reports set forth against it, on account of the loss of an American-built ship there during the early

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days of the New Zealand gold diggings, and though the loss of that ship was clearly attributable to the most gross carelessness, if not to intention, on the part of the crew, who were desirous to run to the diggings. The desire of those interested in ports situated further to the north of the middle island of New Zealand, for long encouraged the non-contradiction of these unfavourable reports, and even led to such a manipulation of shipping reports of arrivals and departures, that for many years, when the mail from New Zealand to Britain was run via Melbourne, the Bluff was not named as the first port of the English mails arrival, and the last of departure; but most frequently Otago was named as the port of first arrival from and despatch to Great Britain; and this was carried on unchecked in many instances, and until the good name of 'Bluff Harbour' was swallowed up, most unjustifiably, by the port of 'Otago,' about 150 miles to the northward of Bluff Harbour. Bluff Harbour has many advantages as a mail port between England and New Zealand, among which I note a few:—First. Its being geographically, I believe, the nearest safe and commodious port for the arrival of ships from Great Britain. Second. Having the best 'landfall' in the 'Solanders,' two very prominent rocks like Ailsa Craig, in the first place, and Bluff Hill in the second place, not to mention the lighthouse on Dog Island (off the mouth of Bluff Harbour) to which light a steamer could steer a straight course through 'Foveaux Straits,' after having sighted the Solanders. Third. Its ease of access, from the fact of the prevailing winds blowing through 'Foveaux Straits' across the mouth of Bluff Harbour, thus making, as sailors say, a soldier's wind, rendering the harbour of very easy ingress or egress for even sailing ships; and Fourth. Good and very safe anchorage for vessels of any size usually used in the commerce of the Pacific Ocean. The commercial advantages are very great; also, as behind Bluff Harbour, and connected with it by railway, is a magnificent country running back to the Waikatipu Lake, distant from the top of Bluff Harbour about 100 miles; and an almost equally rich country, extending in fertile valleys and hills to the left up into the Mavora and Te Annau Lake country. All this magnificent back country produces in perfection the grains and roots of

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Britain, and is capable of producing all the products of France and Spain if only ordinary care is exercised in selecting soil and situation, and adopting a suitable style of culture. It is also very rich in minerals from gold to coal, and though only one field of the latter is in active operation, there are many miles of coal land, containing coal as good for steam purposes as the best Clyde or Welsh coal, within easy distance of Bluff Harbour, and close to main lines of railway. All Bluff wants to make it the harbour of the Middle Island is a graving dock for the admission of the largest-sized mercantile steamers of the day, and a good slip dock for vessels of smaller size, and the natural formation of the harbour, makes both these works of comparatively easy construction, the cockle banks and sand banks at the head of Bluff Harbour, with narrow channels between, having done half the work for a slip dock naturally, and a little dredging and banking would do the rest. For a graving dock the natural facilities and capabilities are also very great, and well worth the attention of some of our leading contractors, who might arrange for a long lease of the whole harbour, on terms of constructing certain works which would soon pay a good interest on capital expended, and at the same time make Bluff Harbour what it is by natural situation—a very leading commercial port of the Middle Island of New Zealand, and the mail port for European mails for all the New Zealand group of the North, Middle, and Stewart's Islands. I spent many months at Bluff Harbour, and have seen it in all kinds of weather, and I resided many years within a few miles of it. As to the character of the country behind Bluff Harbour, I can pledge myself to its correctness, for I write from recollection of having traversed it in all directions on foot with an eye to its capabilities of useful and profitable production beyond the mere squatocratic old idea of its capabilities to support sheep, cattle, and collie dogs, and as few men and women as possible.

"Yours, &c.,

"THOMAS EDMOND.

"Cambuslang, near Glasgow, Sept. 15th, 1884."

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## NAVIGATION OF WEST HIGHLANDS, SCOTLAND.

*To the Editor of the "Nautical Magazine."*

SIR,—The enclosed copy of letter to the Commissioners of Northern Lights may be of interest to some of your readers.

Yours truly,

JAMES CURRIE.

Leith, September 18th, 1884.

(COPY.)

18th September, 1884.

To the Secretary of the Commissioners of Northern Lights.

Sir,—I respectfully request the attention of the Commissioners to the necessity for improved means of marking the position of dangerous rocks in the West Highlands.

About a month ago I visited Loch Moidart in a steamer of 150 tons, intending to enter by the north channel; but on approaching the entrance it was found that the perch or beacon shown on the Admiralty chart as marking a dangerous outlying reef, had disappeared; while the perches indicating the south channel were simple poles, difficult of recognition. I venture to suggest that the outer perch at Loch Moidart should be restored; that all the perches should be surmounted by a barrel or cage, and that either the form or colour of the cage should indicate on which side of the channel the perch is placed.

On a subsequent visit to Arisaig, the perches marking its dangerous and intricate channel were also found to be plain poles, not easily seen in thick weather, and with nothing to indicate which side of the channel they were on. At Arisaig, also, the perches should terminate in barrels or cages, the form or colour of which would indicate the respective sides of the channel.

Believing that the improvements herein suggested would be useful both to coasting and fishing vessels, I respectfully commend them to the consideration of the Commissioners.

I remain, Sir,

Your obedient servant,

(Signed) JAMES CURRIE.

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## OUR LIBRARY TABLE.

Our *Nautical Notices* require this month unusual attention, due to their number and importance.

The books, pamphlets, and papers on our table are as follows:—

*Charts showing the Surface Temperature of the Atlantic, Indian, and Pacific Oceans.* Published by the authority of the Meteorological Council

The series of charts in this Atlas are for the months of February, May, August, and November, selected to represent Winter, Spring, Summer, and Autumn of either Hemisphere. Four large charts are given for each ocean, and the temperatures are entered in great detail; there are also four Index Charts, on a smaller scale, which exhibit, for the same months, the lines of equal temperature (isotherms) over the entire globe.

The observations used have been chiefly derived from logs and documents belonging to the Meteorological Office, and from the Remark Books of Her Majesty's ships, furnished by the Admiralty, but in addition to these the works of various Arctic Navigators have been examined, also Maury's Charts and various other publications.

The average temperatures are given generally for each space contained by 2° of latitude and 2° of longitude, and under each mean a figure is given showing the amount of range in degrees Fahrenheit. Lines of equal temperature, or isotherms, are drawn for each 5° Fahrenheit, and the part of the sea over which the range of temperature is large is shaded blue.

These charts show many interesting and valuable results and afford a vast amount of material for tracing the main ocean currents and their influence on the surface waters of the whole globe. The four index charts give a ready and easy means of comparing the surface temperature of one season with that of another for any part of the world and shows very clearly the progressive change of sea surface temperature dependent on season.

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The *Quarterly Weather Report of the Meteorological Office* (New Series), Part IV., October-December, 1876; also *Hourly Readings*, 1882; and the *Monthly Weather Report of the Meteorological Office* for March and April, 1884; all published by the authority of the Meteorological Council, with the usual diagrams and tabular matter conveying the exact data for future discussion; the information is more local than general, but being very completely collected and arranged has a distinct and appreciable importance and worth:—For instance, the Appendices on "London Rain" and the "Amount of Carbonic Acid in London Air"—both by W. J. Russell, Ph. D., F.R.S.—are ably written, but more affect the Metropolis than elsewhere. *Report on the Eleventh Annual Conference of the Association for the Reform and Codification of the Law of Nations*, held at Milan, September, 1883, gives a good summary of the progress of the Society in its aim to bring about the necessary reforms.

*Rivista Marittima* (Rome), September, 1884, contains an interesting paper by an officer in the Italian Navy, on the Panama Canal; an article on the Arsenals and the Marine of China, written at Shanghai, by Captain Volpe; and one on the accommodation on board ships of war for seamen, especially as regards the lighting of the seamen's and officers' quarters, by Dr. Accardi.

Among the foreign magazines we have to hand—*Van Nostrand's Engineering Magazine* (New York), for August and September. *Revue Maritime et Coloniale* (Paris), for September; *Boletin de la Sociedad Geográfica de Madrid*, for July; *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft VIII.; *Meteorologische Zeitschrift* (Berlin), for July and August, both excellent numbers; and *Revista del Boletin Oficial de las Armas Generales*, &c. (Manila), Nos. V. and VI. *Rivista della Marina Mercantile* (Trieste), September, 1884, and the current numbers of *Le Yacht*. The latter, for 20th September, contains an important paper on English yacht-construction apropos of the loss of the *Mignonette*.

We are also in receipt of the latest numbers of *Hansa*, *Das Schiff*, *L'Avenir Militaire*, the *New York Maritime Register*, the *Nautical Gazette* (U.S.), the *Scientific American*, *Forest and Stream* (U.S.), and the *San Pedro Shipping Gazette*, of the West Coast.



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## MARINE INVENTIONS.

*The following list has been compiled for this Journal by Messrs. W. P. Thompson and Boult, British and International Patent and Trade Mark Agents and Consulting Engineers, of* 323, *High Holborn, London, W.C., and* 6, *Lord Street, Liverpool:—*

### PATENTS PUBLISHED.

5510. 24th November, 1883. John Dixon, engineer, Blyth, Matthew Waddle, fitter, Blyth, Edward Marshall, marine surveyor, North Shields, and Robert Dawson, colliery engineer, Blyth, all in the County of Northumberland. "Improvements in automatic detaching and safety attaching gear for ships' boats." The invention relates to improved apparatus for automatically detaching ships' boats by contact with the water, and especially to means whereby the attaching to the tackles is secured with perfect safety. At each end of the boat there is a frame forming a "stanchion" from the underside of the "thwart" down to the keel, and in each thwart there is a transverse opening through which the link or shackle of the lower tackle block passes to engage with the detaching lever hook. The lever hook is of peculiar shape and works upon a fulcrum pin between the sides of the frame, its point being just underneath the thwart, and it has a tail piece attached by a short link to the upper end of a vertical lever fulcrumed on a pin between the sides of the stanchion frame; its lower end is connected by a rod or tube to a similar lever at the other end so that the action is simultaneous at both ends of the boat. On one of the vertical levers is a projecting arm carrying a heavy balance weight which serves to release the catches. The safety attaching gear consists (at each end of the boat) of a trigger lock lever, formed of a bar passing under the opening in the thwart; working on a fulcrum underneath the thwart, and at the free end of the lever there are claws receiving a pin or stud projecting from the lever hook.

5565. 29th November, 1883. Sauvée. (A communication from Jean Baptiste Gustave Adolphe Canet, of Paris, in the Republic of France.) "An improved tube and carriage for the launching of fish

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torpedoes by means of gunpowder or any similar explosive." The operation of the device is described as follows:—Suppose that a torpedo has just been discharged, the gunner then tightens a spring by means of a handspike attached to a crank lever; the said spring is kept cocked by a catch lever. The gunner also puts in a safety pin. He then opens the breech somewhat as the breech of a rifle is opened, and the torpedo is introduced. A suitable chamber then receives the gunpowder, and the breech is closed again. A fresh fuse is introduced by pulling out a hammer and pushing it down certain inclined planes. The whole is so arranged that if the adjustments are not properly made the fuse cannot be exploded.

5966. 21st December, 1884. Frederick William Durham and James Dixon Churchill, both of 23, Leadenhall Street, in the City of London. "New or improved apparatus for effecting intermittent action of fog and other signals." A steam cylinder is provided and connected with the piston of a cataract cylinder charged with liquid, one end communicating with the other by valves, allowing the flow of the liquid to be regulated. In communication with the steam cylinder, there is a second steam cylinder, having a piston connected with the cock or valve of the fog-horn, whistle, or other signalling instrument. According to a modification, one steam cylinder only is used, and connected with the cock or valve of the signal, and with a spring acting on the cataract piston, the slide of the steam cylinder being governed by the cataract cylinder. The apparatus is applicable to the working of any kind of intermittent signals.



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# TIDE TABLES FOR OCTOBER, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | LONDON BRIDGE. | | HULL. | | NORTH SHIELDS | | LEITH. | | DEVONPORT. | | DOVER. | | WESTON SUPER-MARE. | | LIVERPOOL. | | GREENOCK | | QUEENSTOWN | | KINGSTOWN. | | LONDONDERRY. | | BREST. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| W | 1 | 11 5 | 11 37 | 3 17 | 3 48 | 0 24 | 0 52 | 11 47 | — | 2 10 | 2 44 | 8 0 | 8 27 | 3 24 | 3 56 | 8 21 | 8 49 | 8 57 | 9 25 | 1 47 | 2 16 | 8 10 | 8 37 | 5 11 | 5 31 | 0 45 | 1 12 |
| Th | 2 | — | 0 4 | 4 15 | 4 38 | 1 16 | 1 37 | 0 11 | 0 31 | 3 14 | 3 40 | 8 51 | 9 13 | 4 25 | 4 51 | 9 11 | 9 31 | 9 48 | 10 10 | 2 41 | 3 4 | 9 1 | 9 24 | 5 51 | 6 11 | 1 35 | 1 55 |
| F | 3 | 0 28 | 0 49 | 4 58 | 5 18 | 1 56 | 2 15 | 0 51 | 1 11 | 4 3 | 4 26 | 9 35 | 9 56 | 5 15 | 5 38 | 9 51 | 10 10 | 10 32 | 10 54 | 3 26 | 3 47 | 9 45 | 10 3 | 6 31 | 6 51 | 2 15 | 2 35 |
| S | 4 | 1 9 | 1 30 | 5 37 | 5 56 | 2 34 | 2 52 | 1 31 | 1 51 | 4 49 | 5 11 | 10 17 | 10 39 | 6 0 | 6 22 | 10 29 | 10 49 | 11 15 | 11 36 | 4 8 | 4 29 | 10 21 | 10 39 | 7 11 | 7 31 | 2 55 | 3 15 |
| S | 5 | 1 49 | 2 6 | 6 16 | 6 36 | 3 11 | 3 30 | 2 10 | 2 28 | 5 32 | 5 53 | 11 1 | 11 23 | 6 43 | 7 4 | 11 9 | 11 29 | 11 57 | — | 4 49 | 5 10 | 10 58 | 11 18 | 7 50 | 8 9 | 3 35 | 3 54 |
| M | 6 | 2 25 | 2 46 | 6 57 | 7 18 | 3 49 | 4 9 | 2 46 | 3 5 | 6 14 | 6 35 | 11 45 | — | 7 24 | 7 44 | 11 50 | — | 0 18 | 0 39 | 5 31 | 5 52 | 11 38 | mid. | 8 28 | 8 47 | 4 14 | 4 35 |
| Th | 7 | 3 5 | 3 24 | 7 39 | 8 0 | 4 31 | 4 53 | 3 25 | 3 47 | 6 55 | 7 15 | 0 8 | 0 31 | 8 5 | 8 26 | 0 11 | 0 32 | 1 0 | 1 21 | 6 14 | 6 36 | — | 0 22 | 9 7 | 9 27 | 4 56 | 5 17 |
| W | 8 | 3 46 | 4 7 | 8 21 | 8 43 | 5 15 | 5 38 | 4 10 | 4 33 | 7 35 | 7 56 | 0 54 | 1 18 | 8 47 | 9 8 | 0 54 | 1 16 | 1 43 | 2 5 | 6 58 | 7 20 | 0 44 | 1 7 | 9 48 | 10 10 | 5 39 | 6 1 |
| Th | 9 | 4 29 | 4 51 | 9 6 | 9 30 | 6 2 | 6 26 | 4 56 | 5 20 | 8 18 | 8 40 | 1 42 | 2 6 | 9 28 | 9 48 | 1 38 | 2 0 | 2 27 | 2 49 | 7 42 | 8 5 | 1 31 | 1 55 | 10 33 | 11 0 | 6 24 | 6 48 |
| F | 10 | 5 15 | 5 39 | 9 55 | 10 23 | 6 51 | 7 19 | 5 46 | 6 14 | 9 4 | 9 30 | 2 30 | 2 55 | 10 9 | 10 32 | 2 24 | 2 49 | 3 18 | 3 38 | 8 29 | 8 55 | 2 20 | 2 48 | 11 34 | — | 7 13 | 7 41 |
| S | 11 | 6 6 | 6 33 | 10 54 | 11 30 | 7 51 | 8 27 | 6 46 | 7 22 | 9 57 | 10 26 | 3 22 | 3 51 | 10 58 | 11 29 | 3 17 | 3 48 | 4 5 | 4 35 | 9 22 | 9 53 | 3 18 | 3 52 | 0 12 | 0 55 | 8 13 | 8 49 |
| S | 12 | 7 5 | 7 41 | — | 0 10 | 9 7 | 9 50 | 8 1 | 8 43 | 10 59 | 11 37 | 4 22 | 4 56 | — | 0 5 | 4 25 | 5 7 | 5 9 | 5 46 | 10 30 | 11 12 | 4 30 | 5 9 | 1 41 | 2 27 | 9 27 | 10 10 |
| M | 13 | 8 22 | 9 5 | 0 50 | 1 30 | 10 33 | 11 13 | 9 27 | 10 7 | — | 0 19 | 5 33 | 6 12 | 0 47 | 1 30 | 5 54 | 6 39 | 6 28 | 7 9 | 11 55 | — | 5 50 | 6 28 | 3 9 | 3 46 | 10 55 | 11 37 |
| Th | 14 | 9 50 | 10 30 | 2 8 | 2 45 | 11 51 | — | 10 44 | 11 18 | 1 2 | 1 42 | 6 51 | 7 29 | 2 12 | 2 51 | 7 19 | 7 55 | 7 49 | 8 26 | 0 36 | 1 15 | 7 5 | 7 39 | 4 18 | 4 46 | — | 0 15 |
| W | 15 | 11 5 | 11 38 | 3 19 | 3 50 | 0 25 | 0 53 | 11 48 | — | 2 19 | 2 52 | 8 2 | 8 30 | 3 29 | 4 2 | 8 25 | 8 51 | 9 0 | 9 28 | 1 50 | 2 20 | 8 11 | 8 40 | 5 11 | 5 33 | 0 47 | 1 15 |
| Th | 16 | — | 0 7 | 4 18 | 4 41 | 1 18 | 1 40 | 0 13 | 0 34 | 3 21 | 3 47 | 8 55 | 9 18 | 4 31 | 4 58 | 9 14 | 9 35 | 9 53 | 10 15 | 2 45 | 3 9 | 9 6 | 9 29 | 5 54 | 6 15 | 1 39 | 2 0 |
| F | 17 | 0 31 | 0 54 | 5 1 | 5 21 | 2 0 | 2 20 | 0 55 | 1 16 | 4 11 | 4 33 | 9 40 | 10 2 | 5 22 | 5 45 | 9 55 | 10 15 | 10 37 | 10 59 | 3 31 | 3 53 | 9 49 | 10 8 | 6 36 | 6 57 | 2 20 | 2 40 |
| S | 18 | 1 15 | 1 34 | 5 41 | 6 1 | 2 39 | 2 57 | 1 36 | 1 54 | 4 54 | 5 13 | 10 23 | 10 43 | 6 6 | 6 26 | 10 34 | 10 52 | 11 20 | 11 40 | 4 13 | 4 32 | 10 25 | 10 42 | 7 17 | 7 35 | 2 59 | 3 17 |
| S | 19 | 1 53 | 2 10 | 6 20 | 6 39 | 3 14 | 3 31 | 2 12 | 2 29 | 5 32 | 5 50 | 11 3 | 11 22 | 6 45 | 7 3 | 11 10 | 11 28 | 11 59 | — | 4 51 | 5 9 | 10 59 | 11 16 | 7 52 | 8 8 | 3 35 | 3 53 |
| M | 20 | 2 27 | 2 44 | 6 57 | 7 14 | 3 48 | 4 5 | 2 45 | 3 1 | 6 7 | 6 23 | 11 40 | 11 58 | 7 20 | 7 36 | 11 45 | — | 0 17 | 0 34 | 5 26 | 5 43 | 11 33 | 11 50 | 8 24 | 8 39 | 4 10 | 4 27 |
| Th | 21 | 3 0 | 3 16 | 7 31 | 7 47 | 4 22 | 4 39 | 3 17 | 3 33 | 6 38 | 6 52 | — | 0 16 | 7 52 | 8 8 | 0 2 | 0 19 | 0 51 | 1 8 | 6 0 | 6 17 | — | 0 7 | 8 54 | 9 9 | 4 43 | 4 59 |
| W | 22 | 3 33 | 3 48 | 8 3 | 8 19 | 4 56 | 5 13 | 3 50 | 4 7 | 7 6 | 7 21 | 0 34 | 0 52 | 8 24 | 8 39 | 0 35 | 0 51 | 1 25 | 1 41 | 6 34 | 6 50 | 0 24 | 0 41 | 9 24 | 9 40 | 5 14 | 5 30 |
| Th | 23 | 4 5 | 4 21 | 8 36 | 8 53 | 5 30 | 5 48 | 4 24 | 4 42 | 7 36 | 7 51 | 1 10 | 1 28 | 8 54 | 9 9 | 1 7 | 1 23 | 1 57 | 2 14 | 7 6 | 7 23 | 0 59 | 1 17 | 9 56 | 10 13 | 5 47 | 6 5 |
| F | 24 | 4 37 | 4 54 | 9 10 | 9 28 | 6 6 | 6 25 | 5 0 | 5 20 | 8 6 | 8 22 | 1 46 | 2 5 | 9 24 | 9 40 | 1 40 | 1 58 | 2 31 | 2 48 | 7 40 | 7 57 | 1 35 | 1 54 | 10 32 | 10 55 | 6 23 | 6 42 |
| S | 25 | 5 12 | 5 30 | 9 48 | 10 10 | 6 45 | 7 7 | 5 41 | 6 4 | 8 40 | 9 0 | 2 24 | 2 44 | 9 56 | 10 13 | 2 17 | 2 37 | 3 6 | 3 26 | 8 16 | 8 36 | 2 14 | 2 36 | 11 23 | 11 53 | 7 3 | 7 25 |
| S | 26 | 5 52 | 6 14 | 10 35 | 11 3 | 7 31 | 7 59 | 6 28 | 6 55 | 9 22 | 9 46 | 3 4 | 3 26 | 10 33 | 10 57 | 2 58 | 3 22 | 3 47 | 4 10 | 8 58 | 9 22 | 3 0 | 3 26 | — | 0 26 | 7 49 | 8 16 |
| M | 27 | 6 38 | 7 8 | 11 35 | — | 8 31 | 9 7 | 7 25 | 8 0 | 10 14 | 10 45 | 3 51 | 4 19 | 11 27 | — | 3 50 | 4 24 | 4 36 | 5 7 | 9 51 | 10 27 | 3 56 | 4 30 | 1 2 | 1 43 | 8 47 | 9 24 |
| Th | 28 | 7 41 | 8 16 | 0 10 | 0 46 | 9 47 | 10 25 | 8 40 | 9 20 | 11 22 | — | 4 51 | 5 25 | 0 2 | 0 39 | 5 4 | 5 45 | 5 43 | 6 20 | 11 5 | 11 44 | 5 6 | 5 43 | 2 24 | 3 2 | 10 3 | 10 43 |
| W | 29 | 8 57 | 9 39 | 1 22 | 1 57 | 11 2 | 11 38 | 9 57 | 10 31 | 0 3 | 0 45 | 6 0 | 6 36 | 1 18 | 1 57 | 6 26 | 7 5 | 6 58 | 7 35 | — | 0 21 | 6 18 | 6 52 | 3 36 | 4 7 | 11 22 | 11 57 |
| Th | 30 | 10 17 | 10 49 | 2 31 | 3 3 | — | 0 9 | 11 2 | 11 30 | 1 25 | 2 1 | 7 10 | 7 42 | 2 33 | 3 7 | 7 38 | 8 7 | 8 9 | 8 40 | 0 56 | 1 29 | 7 23 | 7 58 | 4 33 | 4 55 | — | 0 28 |
| F | 31 | 11 20 | 11 47 | 3 33 | 3 59 | 0 36 | 1 0 | 11 54 | — | 2 33 | 3 2 | 8 10 | 8 36 | 3 39 | 4 9 | 8 33 | 8 56 | 9 8 | 9 33 | 1 59 | 2 26 | 8 20 | 8 48 | 5 16 | 5 37 | 0 55 | 1 20 |



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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* − *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −8 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 13 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 3 | Brest |
| Boulogne | +0 18 | Dover |
| Bridport | +0 22 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbellton | −0 23 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 3 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 3 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 58 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 53 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 53 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 3 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 43 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 13 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 13 | Devonport |
| Peterhead | −1 48 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 33 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 8 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 53 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 22 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 22 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 48 | London |
| Youghall | +0 18 | Queenstown |

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# MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 309 | England—East Coast—Tees Bay | New light. |
| 310 | „ West Coast—Carnarvon Bay | Alteration of fog-signal. |
| 311 | „ „ Caldy Island | Light to be altered, Jan., 1885. |
| 312 | „ „ Smalls, Bardsey, &c. | Lights to be altered, Jan., 1885. |
| 313 | „ „ Liverpool Bay | Alterations carried out. |
| 314 | Scotland—Moray, Inverness, Cromarty, and Dornoch Firths | Change of buoys. |
| 315 | Ireland—East Coast—Dublin Harbour—Poolbeg Lighthouse | New fog-siren. |
| 316 | „ Belfast Lough Entrance | Alteration in lights, Nov. 1, 1884. |
| 317 | France—North Coast—St. Marcouf Island | Light altered in character. |
| 318 | „ „ Boulogne Harbour Works | Bell buoy altered in position. |
| 319 | North Sea—Outer Elbe Light-ship | Alteration in fog-signals. |
| 320 | Norway—South Coast—Laurvik Fiord—Svenöer Light | To be altered, July, 1885. |
| 321 | Baltic—Gulf of Riga—Dome-ness Reef | New light and fog-signal. |
| 322 | „ Dago and Osel Islands | Cruisers in vicinity. |
| 323 | Gulf of Bothnia—Quarken (Norrskär) | Provisional light. |
| 324 | White Sea—Arkhangel Bay—North Dvina River | New fog-signal at light-ship. |
| 325 | Mediterranean—Algeria—Cape de Garde | Alteration in light. |
| 326 | „ Lipari Islands—Salina Island—Lo Capo | New light. |
| 327 | „ Sicily—Marsala | Harbour light on breakwater. |
| 328 | „ „ Cape Peloro | Alteration in light. |
| 329 | „ Malta — Dellamara Point | Provisional light. |
| 330 | „ Greece—Euripo Channel—Berdougi Islet | New light. |
| 331 | „ Tenedos | Telegraph cables. |
| 332 | Black Sea—Anatolia—Pirios Point | New light. |
| 333 | Red Sea—Nubia—Sawákin Approaches | Buoyage.—Particulars of Islands and Reefs. |
| 334 | Africa—Algoa Bay—Port Elizabeth | New harbour lights. |
| 335 | Indian Ocean — Madagascar — Nos Vaurou Islet | New light. |
| 336 | „ Arabian Sea—Minikoi Island | New light in Jan., 1885. |
| 337 | Gulf of Aden—African Coast—Gulf of Tejureh | Various shoals. |
| 338 | Australia — N.W. Coast — Dampier Archipelago | Particulars of certain reefs. |
| 339 | „ East Coast — Frankland Island | Reported sunken rock. |
| 340 | „ South Coast — Portland Bay | Alteration in lights. |
| 341 | New Zealand—North Island — Kaipara Harbour | Leading marks altered. |

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MONTHLY ABSTRACT OF NAUTICAL NOTICES—*continued.*

| No. | PLACE. | SUBJECT. |
|---|---|---|
| 342 | UNITED STATES — Chesapeake Bay — Wicomico River — Great Shoals | New light and fog-signal. |
| 343 | „ New Jersey — Delaware Bay | Change of light-vessels. |
| 344 | „ New York — East River | Discovery of sunken rocks. |
| 345 | NEWFOUNDLAND—South Coast — Galantry Head Lighthouse | Alteration in fog-signal. |
| 346 | CANADA — Prince Edward Island — Cape Egmont | New light. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

309.—ENGLAND.—*East Coast.—Tees Bay Lights.*—On and after the 3rd of November, 1884, a *white flash* light will be exhibited from a tower erected on the end of the South Gare breakwater. It will be a *revolving* light, giving a *flash* of *three seconds'* duration every 10 seconds, elevated 55 feet above the sea, and visible from a distance of 10 miles. The light will be exhibited from a round tower painted white, and to the southward will not be visible to the south of E.S.E. (from the light), or inside Saltscar buoy.

310.—*West Coast.—Carnarvon Bay Light-Vessel.—Alteration in Character of Fog-Signal.*—In accordance with previous Notice, the character of the fog-signal on board Carnarvon bay light-vessel is now altered, so that in thick or foggy weather it will give *two blasts* in quick succession every two minutes in the manner following, viz. :—A low note of 2½ *seconds'* duration, silence 2½ *seconds*, a high note of 2½ *seconds*, followed by a silent interval of 112½ *seconds*. In other words, the double blast will be low-high every two minutes.

311.—ENGLAND.—*West Coast.—Bristol Channel.—Caldy Island Light.—Delay in Alteration.*—With reference to Notice 243, p. 700, on intended alteration, in the month of October, 1884, in the character of the light exhibited on Caldy island, approach to Caldy and Tenby roads; the alteration has been postponed until

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1st January, 1885, when the light will be an *occulting* light, giving *one occultation every half-minute* in the following order :— Light *twenty-seven seconds*, eclipse *three seconds*.

312.—ENGLAND.—*West Coast.—Smalls, Bardsey, Skerries, and St. Bees Lights.—Delay in Alterations.*—With reference to previous Notice on intended alteration, in the month of October, 1884, in the character of the undermentioned lights on the West coast of England :—

Further Notice has been given that on 1st January, 1885, the following alterations will be made :—

*Smalls Light* will be an *occulting* light, giving *two occultations every minute* in the following order :—Light *fifty-four seconds*, eclipse *two seconds ;* light *two seconds*, eclipse *two seconds*.

*Bardsey Light* will be an *occulting* light, giving *one occultation every half-minute* in the following order :—Light *twenty-seven seconds*, eclipse *three seconds*.

*Skerries Light* will be an *occulting* light, giving *three occultations every minute* in the following order :—Light *fifty seconds*, eclipse *two seconds ;* light *two seconds*, eclipse *two seconds ;* light *two seconds*, eclipse *two seconds*.

*St. Bees Light* will be an *occulting* light, giving *two occultations every half-minute* in the following order :—Light *twenty-four seconds*, eclipse *two seconds ;* light *two seconds*, eclipse *two seconds*.

Further Notice will be given when these alterations are completed.

313.—ENGLAND.—*West Coast.—Liverpool Bay.—Alteration in Lights and Buoys.*—According to Notice 267, p. 791, the changes in the respective stations of the Formby and Bar lightships, and the buoyage of the Queen channel, &c., were carried out on 27th August, as proposed.

314.—SCOTLAND.—*Moray, Inverness, Cromarty, and Dornoch Firths.—Change of Buoys in these Districts.*—In the course of October, 1884, it is intended (weather and other circumstances permitting) to substitute for the undernoted *Nine* buoys in the Moray, Inverness, Cromarty, and Dornoch, districts—which are can buoys coloured red—*Nine* conical buoys also coloured red. These conical buoys will be moored in the same positions, and have the same marks and bearings as those of the present can buoys,

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which they are to replace respectively. The *Nine* can buoys above referred to, are :—

Three King's buoy, Navitty Bank buoy, and Riff Bank Middle (*south edge*) buoy, in Moray Firth.

Skate Bank buoy, Middle Bank (*east*) buoy, and Meiklemee Bank buoy, in Inverness Firth.

Nigg Sands (*east*) buoy, and Nigg Sands (*west*) buoy, in Cromarty Firth.

Tain Bar (*north*) buoy, in Dornoch Firth.

Pilots, mariners, and others, are therefore requested to have this Notice in view, and to keep a good look-out for the change in the shape of the above buoys which is now intimated.

315.—IRELAND.—*East Coast.—Dublin Harbour.—Fog-siren at Poolbeg Lighthouse.*—On and after the 1st day of October, 1884, a fog-siren, which has been erected at Poolbeg lighthouse, will be sounded during fogs. The siren will give *two blasts in quick succession* every 40 *seconds*, the *first* blast a *high* note, the *second* blast a *low* note. The duration of each blast will be two seconds, with a silent interval between the high and low notes of one second, and the low note will be followed by another silent interval of 35 seconds.

316.—IRELAND.—*East Coast.—Belfast Lough Entrance.—Intended Group Flashing Light and Fog-signal on Mew Island; also, Discontinuance of Copeland Light and Fog-signal.*—With reference to Notice 161, p. 414, on or about 1st November, 1884, the light and fog-signal will be established on Mew island, and the light and fog-signal on Copeland island will be discontinued :—The light will be a *group flashing white* light, exhibiting *about four flashes in quick succession every minute;* it will be obscured through an arc of 97½°, or between the bearings of S. 75½° E., through east, and N. 7° E., indicating the dangers near Grey point, and those eastward of Great Copeland island. The lighthouse is situated east from Copeland lighthouse, distant 4 cables. Position, lat. 54° 42′ N., long. 5° 31′ W. The signal will be a siren, which, during thick or foggy weather, will give a blast of *four seconds'* duration *on a low note*, followed after an interval of silence of *twelve seconds* by a second blast of *four seconds on a higher note*, succeeded by a silent interval of *one hundred seconds. Variation*, 21¼° *W.*

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317.—FRANCE.—*North Coast.—St. Marcouf Island Light.—Alteration in Character.*—On 1st September, 1884, the following alteration would be made in the character of the light exhibited on the eastern St. Marcouf island:—It is a *flashing white* light, with eclipses *every four seconds*, visible in clear weather from a distance of 9 miles.

318.—FRANCE.—*North Coast.—Boulogne Harbour Works.—Alteration in position of Bell Buoy.*—In consequence of the extension of the S.W. mole of the new harbour at Boulogne, the bell buoy with reflector, marking the works in progress, has been moved seaward to its permanent position, and now lies with the elbow of that mole bearing N.E. by E. ½ E., distant about one cable. *Variation*, 17° *W.*

319.—NORTH SEA.—*Elbe River Entrance.—Outer Elbe Light-vessel.—Alteration in Fog-Signals.*—On 1st August, 1884, the following alteration would be made in the fog-signals on board Elbe light-vessel No. 1, Elbe river entrance:—During thick or foggy weather, the bell will give four long sounds (indicating the word *Elbe*) at short intervals three times *every five minutes*. Should the fog be very dense, a gun will also be fired *every fifteen minutes*. When signals are heard from vessels, the above signals will be given at shorter intervals.

320.—NORWAY.—*South Coast. — Laurvik Fiord Approach.—Svenöer Light.—Intended Alteration in Character.*—On 1st July, 1885, the following alteration will be made in the character of the light exhibited on Svenöer island, approach to Laurvik fiord:—It will be an *intermittent* light, eclipsed twice in quick succession *every half-minute*.

321.—BALTIC.—*Gulf of Riga Entrance.—Light on Dome Ness Reef.—Fog-Signal.*—With reference to Notice in 1883, on the construction of a lighthouse on the extremity of Dome Ness reef, south side of entrance to the gulf of Riga, in lieu of the provisional lighthouse:—On 13th July, 1884, a light was exhibited from the recently erected lighthouse; it is a *fixed white* light, varied by *flashes every forty-five seconds*, elevated 64 feet above the sea, and visible from a distance of about 9 miles. The lighthouse, circular in shape and constructed of iron, is painted red, lantern green.

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Position, lat. 57° 48′ N., long. 22° 39′ E. Also a steam fog-siren and a bell have been established at Dome Ness lighthouse.

322.—Baltic.—*Dagö and Osel Islands—Cruisers near Nekman grund and Vulcher Banks.*—During the period navigation is open, two vessels are maintained to cruise (in turn) near Nekman grund, and two near Vulchur banks, in order to warn vessels should they approach those dangers too closely; these vessels cruise close to the banks, or in calm weather may anchor near them. They are distinguished by a red cross with blue anchors on their sails, and by a triangular flag at the mast-head; those stationed at Nekham grund are painted red, with *Nekman grund* in white letters (Russian characters) on their sides; those at Vulchur banks are painted white, with *Vulchur* in red letters on their sides; at night the vessels carry two lights, placed vertically, at the mast-head; those at Nekman grund, the upper light red and the lower white; at Vulchur banks, the upper green and the lower white. The side-lights are only shown when necessary; should from any cause the vessel be driven from her station, the distinguishing flags and lights will not be shown; during thick or foggy weather, a horn on board the cruiser will give blasts *every five minutes*; should any vessel be seen approaching the banks, the cruiser will call attention by blasts of the fog-horn, and signal by the International Code "you are standing into danger;" lights being used for this purpose at night; the cruisers will render assistance to vessels grounding on the banks, and should it be necessary, land their crews.

323.—Gulf of Bothnia.—*Provisional Light near Quarken (Norrskär) Lighthouse.*—In consequence of the works in progress for placing a new lantern and illuminating apparatus in Quarken, (Norrskär) lighthouse, a provisional light is exhibited from a scaffolding near the lighthouse. This light, shown from a small apparatus, is a *fixed white* light varied by *red* flashes. Further particulars will be published in due course.

324.—White Sea.—*Arkhangel Bay.—North Dvina River Entrance.—Fog-Signal at Light-Vessel.*—A fog-signal has been established on board the light-vessel at North Dvina (Severo Dvinska) river entrance, approach to Arkhangel. The signal is a

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horn, which, during thick or foggy weather, will give a continuous sound for a period of *ten minutes*, followed by an interval of *five minutes*.

325.—MEDITERRANEAN.—*Algeria.—Cape de Garde Light.—Alteration in Character.*—On 20th September, 1884, the following alteration would be made in the character of the light on cape de Garde, northern side of gulf of Bona. The light, to be exhibited from a new lighthouse, will be a *fixed and flashing white light*, with eclipses *every minute;* elevated 469 feet above the sea; and visible, the flashes from a distance of about 31 miles, the fixed light from a distance of 16 miles. The new lighthouse, 46 feet high, is situated 26 feet north-eastward of the old building.

326.—MEDITERRANEAN.—*Lipari or Æolian Islands.—Salina Island.—Light on Lo Capo.*—On 10th August, 1884, a light would be exhibited from a lighthouse erected on Lo Capo, N.E. extreme of Salina island. It is a *fixed white light*, visible seaward through an arc of 228½°, or between the bearings of N. 8¼° W. and S. 51¾° E.; elevated 174 feet above the sea, and should be seen from a distance of 18 miles. The lighthouse, 30 feet high, and octagonal in shape, is, with dwelling adjacent, painted light yellow. Position, lat. 38° 34′ 50″ N., long. 14° 52′ 5″ E. *Variation*, 10¼° *W.*

327.—MEDITERRANEAN.—*Sicily.—West Coast.—Marsala.—Harbour Light on Breakwater.*—With reference to Notice in 1883, on the exhibition of a fixed red light from the extremity of the mole at Marsala:—On 1st August, 1884, a harbour light was exhibited from a pole on the extremity of the breakwater in course of construction at that port. It is a *fixed green* light, elevated 15 feet above the sea, and visible from a distance of about 8 miles.

*Note.*—Vessels entering the port should leave the green light on the starboard-hand, and the red light on the port-hand.

328.—MEDITERRANEAN.—*Strait of Messina.—Sicily.—Alterations in Light on Cape Peloro.*—On 10th August, 1884, a light would be exhibited from a lighthouse erected on cape Peloro, northern entrance to strait of Messina, in lieu of that previously shown from Torre di Faro. It is a *fixed and flashing white* light, showing flashes *every thirty seconds;* elevated 147 feet above the sea, and visible, the fixed light from a distance of about 15 miles, the flashes from a

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distance of 20 miles. The lighthouse, 138 feet high, octagonal in shape and painted white, rises from a house of two storeys. Position, lat. 38° 16′ 5″ N., long. 15° 39′ E.

329.—MEDITERRANEAN.—*Malta.*—*Marsa Scirocco.*—*Intended Provisional Light on Dellamara Point.*—From 1st October to 21st October (inclusive), 1884, a provisional light will be exhibited—pending repair of the permanent light—on Dellamara point, eastern side of Marsa Scirocco:—The provisional light will be a *fixed white* light.

330.—MEDITERRANEAN.—*Greece.*—*Euripo Channel.*—*Light on Eastern Berdougi Islet.*—On 13th August, 1884, a light was exhibited from a lighthouse erected on the summit of the eastern and smallest of the Berdougi (Verdouge islets), southern entrance to Euripo channel:—it is a *fixed red* light, elevated 234 feet above the sea, and visible from a distance of 16 miles. Position approximate, lat. 38° 10½′ N., long. 24° 6¾′ E.

331.—MEDITERRANEAN.—*Asia Minor.*—*Tenedos.*—*Telegraph Cables.*—Four telegraph cables are laid from the southern point of the port of Tenedos—two of which trend to the southward, passing about 7 cables from Oinos point, the other two are laid in an easterly direction for about 1¼ mile, and thence between Gadaro islet and Ocean rock.

*Note.*—Vessels should not anchor in the vicinity of these cables. The best anchorage for vessels of war is in 12 fathoms, with Tar point bearing W.S.W. and Gadaro lighthouse N. ¼ W. *Variation*, 5¼° *W.*

332.—BLACK SEA.—*Anatolian Coast.*—*Light on Pirios Point.*—On 18th August 1884, a light would be exhibited from a lighthouse erected on Pirios point, approach to Rizeh. It is a *fixed red* light, elevated 59 feet above the sea, and visible from a distance of 6 miles. Position approximate, lat. 41° 4′ N., long. 40° 31′ E.

333.—RED SEA.—*Nubia.*—*Approaches to Sawákin.*—*Buoyage, Particulars of Certain Islands and Reefs.*—With reference to Notices 221 and 285 concerning the approaches to Sawákin:—The following information relative to the buoyage, and to certain islands and reefs in those approaches, has been received from the Commander of H.M. Surveying vessel *Myrmidon*:—

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*Sanganeb Reef* (lat. 19° 43′ N., long. 37° 26′ E. approximate), extends 8 miles in a north and south direction; a stone beacon, 10 feet high, surmounted by pole and ball (35 feet above the sea) has been erected 100 yards within the deep water at the southern edge of this reef; from this southern edge, the course to the northern end of the reefs off Towarteet is S.W. ½ S. Search was made for the shoal reported N.E. of Sanganeb reef, but without success; its existence therefore is considered doubtful.

*Towarteet Reef.*—A conical buoy, painted red and white in vertical stripes, with staff and cage, is moored close within the northern horn of the off-shore reefs opposite Towarteet, 23¼ miles northward of Sawákin. This buoy could not be placed outside the reef on account of the deep water; it indicates the northern extreme of the danger in calm weather, but when the reef is well marked by breakers, the buoy is not easily seen.

*Hadaraweep Spit.*—A can buoy, coloured red, is moored close off the shore-fringing reef, 14 miles northward of Sawákin; it marks a 3-fathoms shoal, and a dangerous spit of the shore-fringing reef which is not always seen when approaching from the northward.

*South Jumna Reef.*—A conical buoy, painted red and white in horizontal stripes, with staff and triangle, is moored on the centre of this dangerous reef, which lies N. 76° E., 9⅓ miles from Sawákin harbour entrance; it should not be passed on either hand within the distance of 5 cables. The sea only breaks with a heavy swell.

*Ul Shubuk Channel.—Middle Shoal.*—A can buoy, painted red and white in horizontal stripes, is moored on a 8¼-fathoms shoal, 6¼ miles S.E. by E. ¼ E. from the south-western islet of Kadd Etwid group; it may be passed on either hand at the distance of one cable.

*Kadd Hogeet.*—A stone beacon is being erected on the eastern side of Kadd Hogeet, eastward of Ul Shubuk in the S.E. approach.

*Hind Kadám* (*Hinde Gedam*) *Island* is situated in lat. 19° 22′ ¾ N., long. 37° 53′ ¼ E., or 2¼ miles N.E. of the position formerly assigned. The adjoining reefs, including Sha'b Anber require the

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same correction—being relatively correct with Hind Kadám island, but not with Sawákin.

*North Jumna Reef*, on which the sea breaks, is situated in lat. 19° 26′ ½ N., long. 37° 43′ E.

*Single Rock*, which, according to the Red Sea Pilot (page 95), is situated W. ⅔ N., about 11 miles from Hind Kadám, was not seen during the examination made by the *Myrmidon*. This rock however is believed to exist; H.M.S. *Jumna*, in March last, having sighted a breaking reef bearing W. by N., 10 miles from that island. In accordance with the new position assigned to Hind Kadám, Single rock is placed in lat. 19° 24′ N., long. 37° 42′ ½ E.

The *Isolated Rock* shown in lat. 19° 8′ ½ N., long. 37° 27′ ½ E., *does not exist;* nor does the 3-fathom shoal 2¼ miles E.N.E. of it.

*Directions.*—Having made Towarteet reef buoy, which should not be approached within 3 cables, steer for the shore-fringing reef, and when in mid-channel, alter course to S. ½ E., which will lead 3½ cables eastward of Hadaraweep spit buoy, and to a position off the northern beacon at Sawákin harbour entrance. The indentations of the shore-fringing reef should not be followed. *Variation*, 4¾° *W.*

334.—AFRICA.—*South Coast.—Algoa Bay.—Port Elizabeth.—Harbour Lights.*—On or about 1st July, 1884, the following harbour lights would be exhibited from the South and North jetties at that port; and the light on the boat jetty abreast Custom House Street is discontinued:—The light on the extremity of the new South jetty shows *blue* between the bearings of N. 80° E., through north and west, to south; and *white* from south to S. 70° E. The junction of the blue and white sectors leads 60 yards seaward of the shoal formed by the shield of the old breakwater. The light at the extremity of the North jetty shows *green* seaward through an arc of 150°, or between the bearings of N.W. and S. by E. ½ E., and white inshore of these bearings. To the south-eastward, the junction of the green and white sectors leads southward of the foul rocky ground known as Strutt reef and of the shoal of the shield of the old breakwater; to the northward, the junction of the sectors warns of a too near approach to the sea wall—so that alteration in the colour of the light

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from green to white on either side of the jetty, indicates that the line of safety has been passed. *Variation*, 30° *W.*

385.—INDIAN OCEAN.—*Madagascar.—N.W. Coast.—Nossi Bé.—Light on Nos Vaurou Islet.*—On 1st June, 1884, a light was exhibited from the summit of Nos Vaurou islet, between Nos Beh (Nossi Bé) and Nos Cumba. It is a *fixed white* light, elevated 58 feet above high water, and visible from a distance of 5 miles. The support of the light, 26 feet high, is above the dwelling, the whole painted red. Position, lat. 13° 24′ 40″ S. long. 48° 21′ 35″ E.

386.—INDIAN OCEAN.—*Arabian Sea.—Intended Light on Minikoi Island.*—Early in the month of January, 1885, it is intended to exhibit a light from a lighthouse, now nearly completed, on the S.W. part of Minikoi island, between the Lakadivh and Maldivh groups. It will be a *white* light, revolving *every half-minute*, elevated 150 feet above high water, and visible from a distance of about 19 miles. On a S.W. ¼ S. bearing, the light will be obscured by cocoa-nut trees within a distance of about 8 miles; this obscuration will extend through an arc of 74° to the bearing of W.N.W., where the distance the light is obscured will decrease to about 1¼ mile. The top of the lighthouse, which is built of black brick, and the lantern, will be visible by day above the trees. Position approximate, lat. 8° 16′ N., long. 73° 1′ E. Further Notice will be given on the exhibition of this light. *Variation*, ¼° *E.*

387.—GULF OF ADEN.—*African Coast.—Gulf of Tejúreh Entrance.—Shoal Eastward of Ivát Island.*—The commander of H.M.S. *Ranger*, reports the existence of a shoal lying nearly a mile eastward of the encircling reef of Ivát or Efát island, approach to Zeyla. This shoal (*Ranger shoal*), with about 2½ fathoms on it at low water, lies with the following bearings:—Zeyla, S.S.W.; N.W. extreme of Sadaldin island, S.W; Ivát island beacon, W. ¼ S. Position, lat. 11° 31′ 30″ N., long. 43° 32′ 20″ E.

*Shoal Eastward of Mushahh Islands.*—Also, the existence of a shoal lying about 2½ miles eastward of Mushahh islands, entrance to the gulf of Tejúreh:—This shoal, with a depth of about 1¼ fathom at low water extends about one mile in a N.W. and S.E. direction; its outer extreme lies with the following bearings and distances:—Islet southward of Mushahh islands, W. ¼ S., distant

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2¼ miles; N.E. extreme of Mushahh islands, N.W. by W., distant 2¼ miles. *Variation*, 4¼° *W.*

338.—AUSTRALIA.—*N.W. Coast.—Dampier Archipelago.—Particulars of Certain Reefs.*—The following information has been received at the Hydrographic Office from Staff-Commander Coghlan, Admiralty Surveying Officer, concerning certain reefs in Dampier archipelago :—

*Delambre Reef*, of coral and sand, with 9 to 11 fathoms close around, extends about a cable in a east and west direction. The shoalest spot found, 2 fathoms, lies with the following bearings and distances :—North extreme (triangular hill) of Delambre isle, W. ¼ N., distant 8¾ miles; Bezant islet summit, S.S.W. Wly., distant 7¼ miles.

*Clearing marks.*—South extremes of Dolphin and Delambre isles in line, bearing W. by S. ¼ S., lead northward of Delambre reef; Legendre isle, shut in southward of the northern extreme of Delambre isle, bearing W. by N. ¼ N., leads southward; summits of Round-backed hill (over port Robinson) and Bezout islet in line, S.W. ¼ S., lead eastward.

*Note.*—Round-backed hill is now placed N.W. ½ W. 2¾ miles from the position formerly assigned on the charts. The reef, reported to lie with Delambre isle bearing west, distant about 12 miles, and to have 2 fathoms on it, has been searched for unsuccessfully, and is believed to be identical with Delambre reef; it has therefore been expunged from the charts.

*Dockrell Reef*, in Mermaid strait, has depths of one to 3 fathoms over coral and sand, and extends about 5 cables in an east and west direction with a breadth of 4 cables. The shoalest spot found, 6 feet, lies nearly in mid-channel between Enderby isle and the mainland, with the following bearings and distances : — S.E. extreme of Enderby isle, N.E. ¼ N., distant 3¼ miles; Sand hill over south extreme of Sandy (Eagle-hawk) islet, W., distant $3\frac{9}{10}$ths miles; west extreme of Enderby isle, N.W. ¾ W., distant $4\frac{1}{10}$th miles. The northern extreme of Eagle-hawk islet, bearing west, leads northward of Dockrell reef in about 4¼ fathoms of water.

The rock shown with south extreme of Eagle-hawk islet bearing west, distant 2 miles, has been searched for unsuccessfully, and is



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considered not to exist; depths of 4½ to 5 fathoms were found on and around its assigned position; it has therefore been removed from the charts. A rock, with 10 feet on it, and 4½ to 5 fathoms over sand at a cable's distance around, lies with the south extreme of Eagle-hawk islet bearing W.N.W., distant $1\frac{3}{10}$ths mile. Reefs, uncovering at low water, and sunken dangers on which the sea breaks at times, extend 4 miles in a south-westerly direction from the south shore of Eagle-hawk islet.

*Note.* — The channel (the original Mermaid strait) between Enderby and Eagle-hawk isles is recommended, especially for vessels drawing over 9 feet, in preference to the passage southward of Eagle-hawk islet. *Variation*, ½° *W.*

339.—AUSTRALIA.—*East Coast.—Frankland Islands.—Sunken Rock Reported N.W. of High Island.*—A sunken rock, or coral patch, has been reported as lying 6 cables N.W. by N. from the west point of High island, Frankland islands. Position approximate, lat. 17° 9¼′ S., long. 146° 1½′ E. *Variation*, 6½° *E.*

340.—AUSTRALIA.—*South Coast.—Portland Bay.—Portland Harbour Light.—Alteration in Colour.*—On 7th July, 1884, the portion of Portland harbour light which previously showed red would be altered to *green*; it should be visible in clear weather from a distance of about 12 miles. The light now shows *green* between the bearings of N.W. through west, and S. by E., and *white* over the anchorage from S. by E. to the extremity of the jetty.

*Note.*—Vessels entering Portland bay from the westward, must not, when nearing Lawrence rock, bring the light to bear northward of N.W. by W. ½ W.; having passed the rock, a course may be steered towards the light, keeping it on the port-bow, and not standing into less than 6 fathoms. When abreast the anchorage, the jetty light (red) will be seen bearing about west. *Variation*, 7½° *E.*

*Portland Jetty Light.—Alteration in Colour.*—Also, on 7th July, 1884, Portland jetty light would be altered to a *red* light, which should be visible in clear weather from a distance of about 3 miles.

341.—NEW ZEALAND. — *North Island.—Kaipara Harbour.—Alteration in Leading Marks.*—On or about 20th May, 1884, it was

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proposed to move the flagstaff on North Sand head, Kaipara harbour, about 150 feet E. by S. from its previous position, and it is therefore no longer a leading mark for crossing the bar. The lighthouse tower (when erected), the signalman's house, and the beacon in line will indicate the channel across the bar.

342. — UNITED STATES.—*Chesapeake Bay. — Wicomico River Entrance.—Light and a Fog-signal on Great Shoals.*—On 15th August, 1884, a light would be exhibited from a lighthouse recently erected at the end of Great Shoals, Monie bay, to mark the entrance to Swash channel, Wicomico river entrance. It is a *fixed white* light, elevated 38 feet above high water, and visible from a distance of about 11 miles. The lighthouse, on five screw piles, is a square frame building, painted white ; lantern red ; roof and piles brown. Position, lat. 38° 12′ 40″ N., long. 75° 52″ 55″ W. Also, a fog-signal is established at Great Shoals lighthouse. The signal is a bell, struck by machinery, which, during thick and foggy weather, will give *one* blow at intervals of *fifteen seconds*.

343.—UNITED STATES—*New Jersey.—Change of Light-Vessels.*—Light-ship No. 19, which has been off her station on Fourteen-foot bank, Delaware bay, for repairs, will be replaced, and relief light-ship No. 24 will be withdrawn ; light-ship No. 19 shows *two fixed white* lights, one at foremast-head, the other on main-mast about half-mast high ; has two masts, shooner-rigged ; red hoop-iron day-mark at each mast-head ; hull painted straw-colour, with the words "*Fourteen-Foot bank*" in large black letters on each side. The fog-signal is a bell and horn.

344.—UNITED STATES.—*New York.—Sunken Rocks in East River.*—A dangerous rock lies in mid-channel of East river, near Dimond reef :—This rock, with a least depth of 19½ feet, lies with the following bearings and distances :—Holy Trinity church, Brooklyn, E. by S. ⅛ S., distant 1,684 yards ; Castle William, Governor island, W. by S. ¾ S., distant 880 yards ; Castle Garden, N.N.W., distant 1,060 yards. Another rocky patch, with a least depth of 22 feet, is situated 70 yards N.E. of the above-mentioned rock. *Variation*, 7½° *W.*

345.—NEWFOUNDLAND.—*South Coast.—Galantry Head Light-house. — Alteration in Fog-Signal.* — Should the fog-siren at



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Galantry head lighthouse, approach to St. Pierre, be disabled, a gun will be fired *every half-hour* during fog, instead of every hour as previously.

346.—CANADA.—*Prince Edward Island.—Light on Cape Egmont.* —On 1st September, 1884, a general coast light would be exhibited from a tower on the extreme point of cape Egmont, and 100 feet from the south and west banks of the cape. It is a *fixed red* light; elevated 72 feet above high water, and visible 10 miles from all points seaward, upon the bearings of from south (round by west) to N.W. The buildings consist of a square white tower, with cottage attached on the east side; roofs painted brown; an octagonal iron lantern and an oil house, painted brown, distant 50 feet E.S.E. from the tower. Position, lat. 46° 24′ 20″ N., long. 64° 7′ 45″ W.

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CHARTS, PLANS, &c., PUBLISHED BY THE HYDROGRAPHIC DEPARTMENT, ADMIRALTY, IN JULY AND AUGUST, 1884.

| *No.* | | *s.* | *d.* |
|---|---|---|---|
| 1118*a*, *b* | Scotland, north coast:—Shetland Isles, 2 sheets (plans, Balta sound. Approaches to Scalloway. Bressay sound or Lerwick harbour) ... each | 2 | 6 |
| 1 | British Islands to Mediterranean sea ... ... | 2 | 6 |
| 1646 | Bay of Bengal, gulf of Martaban:—Maulmain harbour ... ... ... ... ... ... | 1 | 0 |
| 654 | Arctic sea:—Bering strait ... ... ... | 2 | 6 |
| 598 | China, east coast:—Li-tsin-ho to Ning-hai (plans, Lau-mu-ho entrance. Ching-ho entrance. Peh-tang-ho entrance. Chi-ho entrance. Tai-cho-ho and Yang-ho entrances) ... ... ... | 2 | 6 |
| 1354*a*, *b* | South Atlantic ocean:—Falkland islands (2 sheets) ... ... ... ... ... each | 2 | 6 |
| 1385 | Plan added. Lobos de Afuera. | | |
| 14 | New plan. Port Sawakin. | | |
| 1884 | Plan added. Akyab. | | |

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CHARTS THAT HAVE RECEIVED IMPORTANT CORRECTIONS.

| *No.* | |
|---|---|
| 2544 | South America, east coast:—Rio de la Plata. |

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*No.*

2540 New Zealand, Middle island :—Awarua or Bluff harbour and New river.

2220 Black sea :—Ports and anchorages on south shore of the Black sea.

2368 Baltic sea, coast of Prussia :—Jershoft light to Rixhoft.

214 South Pacific ocean :—Solomon islands.

2250 Baltic sea :—Gottland island.

625 Africa, west coast :—Congo river.

2313 Norway, west coast :—Andö to Helgö.

2369 Baltic sea, coast of Prussia :—Rixhöft light to Bruster-ort.

641 Africa, south-east coast :—Port Elizabeth.

2377 Baltic sea :—Ports on the east coast of Sweden.

2150 Baltic sea :—Femern to Bornholm.

190 Sicily :—Girgenti and Catania.

2454 Philippine islands :—Luzon island, northern portion.

2312 Norway, west coast :—Lofoten islands to Andö.

1640 South Pacific ocean :—Marquesas islands.

530 South America, east coast :—Victoria to Sta. Catharina.

2224 Baltic sea, gulf of Finland :—Helsingfors and Sveaborg.

2251 Sweden, east coast :—Kalmar sund and Oland.

14 Red sea :—Anchorages in.

1335 South America, west coast :—Chicama river to port Payta.

1324 South America, east coast :—Rio de la Plata to Rio Negro.

2411 New Zealand :—Otago harbour.

679 Madagascar :—Looke, Leven, Andrava, and Vohemar bays.

94 Amphitrite islands :—Tihen-pien or Tien-pack harbour.

1577 North America, west coast :—Columbia river.

2760 Sumatra, west coast :—Acheen head to Tyinkokh bay.

219 Sumatra, west coast :—Acheen head to Diamond point.

2134 Borneo, west coast :—Bruni river entrance.

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HYDROGRAPHIC NOTICES ISSUED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY.

*No.*

16 SOUTH AMERICA PILOT, part 1. Relating to port Belgrano.

17 SOUTH INDIAN OCEAN. Relating to the coast of Madagascar.

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*No.*

18 West India Pilot, Vol. 2. Relating to certain of the West India Islands.

Books.

| | s. | d. |
|---|---|---|
| Sailing Directions for Mauritius and the islands included in its government ... ... ... ... ... | 2 | 0 |
| Sailing Directions for the West Coast of England, from Milford Haven to the Mull of Galloway, third edition, 1884 ... ... ... ... ... | 4 | 6 |

Mediterranean Pilot, Vol. 3. Supplement No. 1.

## OUR OFFICIAL LOG.

Official Return of British Wrecks in August, 1884.—The number and tonnage of British vessels, respecting whose loss reports were received at the Board of Trade during the month of August, 1884, and the number of lives lost, are as follow :—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing..... | 45 | 9,725 | 85 |
| Steam ..... | 14 | 11,877 | Nil |
| Total..... | 59 | 21,602 | 85 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in August relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—Thomas Gray, Assistant-Secretary, Marine Department.—Board of Trade, 2nd September, 1884.

The Board of Trade have awarded a binocular glass to Captain C. Omnès, of the French brigantine *St. Leon*, of St. Malo, in recognition of his humanity and kindness to the shipwrecked crew

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of the barque *Olano*, of Liverpool, whom he received on board his vessel, on the 1st July last, off Staten Island, South America, near which the *Olano* was wrecked, and conveyed to Valparaiso.

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### Official Inquiries at Home, 1884.

2265. *Heathpool*, s.s.; built at Sunderland, 1878; owned by Mr. H. T. Morton; tonnage, 648; Sunderland to St. Nazaire; coal and nine passengers; struck a rock off Porsal, Finisterre, and was abandoned in a sinking condition, July 23, 1884. Inquiry held at Sunderland, August 13, 1884, before Horan and Wilson, Justices; Parish and Ward, N.A. Casualty due to master attempting the Chanel du Four in hazy weather instead of taking an outside course. Certificate not dealt with.

2271*a*. *Inflexible*, s.s. A re-hearing of certain charges preferred against the chief engineer, originally heard by the Local Marine Board at South Shields, who found him guilty of drunkenness, but did not deal with his certificate. Re-heard at Newcastle, July 17, 1884, before Rothery, Wreck Commissioner; Methven, Pickard, and Lang, N.A. Charges of misconduct and drunkenness proved. Certificate cancelled.

2272. *Ardanbhan*, s.s.; built at Port Glasgow, 1880; owned by Mr. J. Crum and others; tonnage, 740; Grangemouth to Cronstadt; coal; stranded near Egero Lighthouse, west coast of Norway, July 4, 1884. Inquiry held at Glasgow, August 13, 1884, before Mowat and Somerville, Justices; Murdoch and Hyde, N.A. Stranding attributed to the fog, and insufficient use of the lead. Master admonished to be more careful in future.

2274. *Roxburghshire*, barque; built at Glasgow, 1876; owned by Mr. James Low and others; tonnage, 929; wheat in bags; left Astoria for Queenstown, October 7, 1883, and has not since been heard of. Inquiry held at Glasgow, August 15, 1884, before Mowat and Somerville, Justices; Beasley and Kiddle, N.A. No evidence as to cause of loss.

2277. *Vicksbury*, barque; built at Miramichi, 1863; owned by Messrs. W. Thomson and Co.; tonnage, 982; Leith to Quebec; coal as ballast; stranded on the Pentland Skerries, July 17, 1884,

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whereby nine lives were lost. Inquiry held at Leith, August 18, 1884, before Garland and M'Intosh, Justices; Wilson, French and Moresby, N.A. Master and both mates in default; the former for having improperly navigated the vessel, and the latter for having prematurely left the vessel in the lifeboat without orders from the master, thereby leaving five of their shipmates to almost certain destruction. Certificate of master suspended for six months, those of the mates for three months.

2278. *Aislaby*, s.s.; built at South Shields, 1877; owned by Mr. R. Harrowing and others; tonnage, 774; Taganrog to Hull; rape seed and linseed; stranded and subsequently foundered off Cape Sagres, July 11, 1884. Inquiry held at Middlesborough, August 18, 1884, before Coleman, Judge; Hight and Anderson, N.A. Master to blame for careless navigation, in driving vessel at full speed in a dense fog and neglecting the lead. Certificate suspended for three months.

2279. *Shaftesbury*, s.s.; built at Dumbarton, 1884; owned by Mr. James Craig and others; tonnage, 432; Sunderland to Cadiz; railway sleepers; stranded about 30 miles east of Ushant Light, July 22, 1884. Inquiry held at Middlesborough, August 20, 1884, before Coleman, Judge; Beasley and Murdoch, N.A. Vessel stranded through default of master, who steered too southerly a course, made no allowance for the tide, and neglected the lead. Certificate suspended for four months.

2280. *Royal Albert*, tug; built at Low Walker, 1862; owned by Mr. J. D. Bootiman; tonnage, 22; accompanying fishing fleet; foundered off St. Abb's Head, August 2, 1884. Inquiry held at Leith, August 22, 1884, before Garland and Wilson, Justices; Ward and Lang, N.A. Casualty caused by bursting of feed pipe; whereby port boiler was blown entirely out, causing vessel to list to starboard and fill with water. No one to blame.

2282. *Richard Owen*, brig, and *Belle Star*, brigantine; former built at Pwllheli, 1875; owned by Mr. Evan Richard and others; tonnage, 169; Cadiz to Harbour Grace; salt; latter built at Digby, N.S.; owned by Messrs. Lee and Rice; tonnage, 353; Nova Scotia to Queenstown; deals; in collision in lat. 45° N. and long 43° W., July 24, 1884, when the former vessel was sunk, and

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loss of life ensued. Inquiry held at Liverpool, August 25, 1884, before Mansfield, Judge; Vaux, Moresby, and Hyde, N.A. Chief officer of *Belle Star* in default for not complying with the Sailing Rules. Certificate suspended for three months.

2284. *Demerara*, barque; built at Dumbarton, 1864; owned by The Barque Demerara Company, Limited; tonnage, 486; from Newport, with coal; abandoned in lat. 32° 22′ N., long 16° 11′ W., July 14, 1884. Inquiry held at Greenock, August 28, 1884; before Blackmore and Reid, Justices; Parish and Pattison, N.A. Loss due to vessel suddenly becoming waterlogged, but how the water got into her there was nothing to show.

2285. *River Avon*, barque; built at Port Glasgow, 1866; owned by Mr. Joseph Burton and others; tonnage, 499; Newport to Chili; railway iron; stranded on a reef east of Bonavista, Cape Verde Islands, June 30, 1884. Inquiry held at Liverpool, August 28, 1884, before Raffles, Judge; Anderson and Murdoch, N.A. Casualty due to careless navigation on part of master. Certificate suspended for six months.

2287. *Leverrier*, s.s.; built at Sunderland, 1877; owned by Mr. Charles Turnbull and others; tonnage, 1,193; Liverpool to Bombay; coal; stranded near Cape Spartel, July 19, 1884. Inquiry held at North Shields, August 27, 1884, before Wait and Jackson, Justices; Wilson and French, N.A. Casualty due to master neglecting to ascertain his position and distance run, keeping on full speed in a fog, and neglecting the lead. Certificate suspended for three months.

2291. *Huelva*, s.s.; built at Sunderland, 1882; owned by Messrs. Shipley and Scott; tonnage, 861; Tyne to Lisbon; coal, gas pipes and steel; stranded near Cape Trece, Spain, July 31, 1884. Inquiry held at North Shields, August 27, 1884, before Green and Cleugh, Justices; Wilson and French, N.A. Casualty caused by master standing on a dangerous course at full speed, during a dense fog, without using the lead when he was doubtful of his position. Certificate suspended for twelve months.

2292. *Captain Parry*, s.s.; built at Stockton-on-Tees, 1877; owned by Mr. M. Murphy, junior, and another; tonnage, 297; Dublin to Newport, Mon.; ballast; stranded near Kilcool, Co.

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Wicklow, August 8, 1884. Inquiry held at Dublin, August 29, 1884, before Woodlock, Judge; Castle and Davies, N.A. Casualty caused by look-out going into the galley, and the second mate and helmsman falling asleep. Second mate uncertificated.

2295. *Gilsland*, s.s.; built in 1874; owned by Mr. W. Milburn and others; tonnage, 1,058; Tyne to Delaware; ballast; stranded in Cruden Bay, July 31, 1884. Inquiry held at North Shields, August 23, 1884, before Green and Jackson, Justices; Curling and Kennedy, N.A. Casualty caused by neglect of master to ascertain his position, and to use the lead. Certificate suspended for the short period of one month, owing to master's high character.

2296. *Osprey*, fishing smack; built at Kingston-upon-Hull, 1866; owned by H. Blanchard; tonnage, 58; engaged fishing; stranded off Amrum Island, North Sea, May 24, 1884. Inquiry held at Hull, August 30, 1884, before Twiss, Judge; Curling and Vaux, N.A. Stranding attributed to negligent navigation of her skipper. Certificate suspended for three months.

2297. *Dione*, s.s., and *Camden*, s.s.; former built at Stockton, 1868; owned by Tees Union Shipping Company (Limited); tonnage, 422; from London with general cargo and 20 passengers; latter built at Low Walker, 1878; owned by Mr. E. H. Watts and others; tonnage, 969; Frontera de Tabasco, Gulf of Mexico, to London; mahogany; in tow, having lost her propeller; in collision near Coalhouse Point, River Thames, August 3, 1884, when former vessel was sunk, and 23 lives lost. Inquiry held at Westminster, August 29, 1884, before Rothery, Wreck Commissioner; Ronaldson and Harland, N.A. Master of *Dione* to blame for not altering his course in sufficient time, and for his high rate of speed. Certificate suspended for six months; recommended for one as mate.

2298. *Glenely*, s.s.; built at Govan, 1883; owned by the Glen Company; tonnage, 1,956; London to China; general cargo; stranded off Ushant, July 29, 1884. Inquiry held at Westminster, August 29, 1884, before Rothery, Wreck Commissioner; Ronaldson and Parfitt, N.A. Casualty caused by master making no allowance for tide. Certificate not dealt with, owing to high character of master.

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2300. *Red Rose*. s.s.; built at Wallsend, 1880; owned by Mr. P. Rowe and others; tonnage, 801; Decido, Spain, to Newport, Mon.; iron ore; stranded near Armen Lighthouse, France, August 10, 1884. Inquiry held at Cardiff, September 4, 1884, before Jones, Judge; Methven and Pattison, N.A. Casualty due to careless navigation on part of master. Certificate suspended for six months.

2301. *Balmoral*, s.s.; built at Aberdeen, 1878; owned by the Davidson Steamship Company, Limited; tonnage, 629; Archangel to Scotland; oats; stranded on a rock off Island of Fuylo, Norway, June 26, 1884. Inquiry held at Aberdeen, September 5, 1884, before Esslemont and Donald, Justices; Ward and Murdoch, N.A. Casualty caused by careless navigation on part of master, who set a wrong course, and neglected the lead. Certificate suspended for three months. Recommended for one as mate.

2305. *Berwick*, s.s.; built at Cartsdyke, Renfrew, 1855; owned by Mr. Isaac Whitfield and others; tonnage, 365; Sunderland to Portsmouth; coals; foundered off Huntcliffe, August 14, 1884. Inquiry held at Sunderland, September 12, 1884, before Booth and Horan, Justices; Comyn and Harland, N.A. Vessel seaworthy. No evidence to show how water got into her.

2246*a*. *Commander*, s.s.; built at Barrow-in-Furness, 1877; owned by Mr. T. Harrison and others; tonnage, 1,039; Maceio, Brazil, to Livepool; sugar and cotton; wrecked near Maceio, June 14, 1884. Inquiry heard in the first instance before a Naval Court at Pernambuco, when certificate of master was suspended for six months. Re-heard at Westminster, August, 18, 1884, before Rothery, Wreck Commissioner; Methven, Castle and Pickard, N.A. Loss not due to any wilful act or default of master; vessel either struck upon a wreck or an unmarked reef. Certificate of master restored.

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### Official Inquiries Abroad, 1884.

2266. *Rougemont*, s.s.; stranded near Cape Negro, Tunisian Coast, June 28, 1884. Inquiry held at Malta. Master neglected to allow for current. Admonished to be more careful in future.

2267. *Hartington*, s.s.; stranded in St. Mary's Bay, June 14.

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1884. Inquiry held at St. John's, Newfoundland, July 25, 1884. Casualty caused by an unusually strong indraught into the bay.

2268. *Geelong*, s.s., and *Florence*, schooner; in collision in the River Yarra, April 14, 1884. Inquiry held at Melbourne, May 16, 1884. Master of *Florence* to blame for attempting to pass between the stern of the *Geelong* and the bank, whilst latter vessel was aground and canted across the river.

2269. *Annie Bragington*, barque; stranded at Balasore, May 31, 1884. Inquiry held at Balasore, June 24, 1884. Casualty caused by vessel's cables parting.

2270. *Star of Italy*, ship, and *Coleroon*, pilot brig; in collision near Eastern Channel lightship, May 20, 1884. Inquiry held at Calcutta, June 5, 1884. Master of *Star of Italy* in default. Severely censured.

2273. *Gulf of St. Vincent*, s.s.; stranded on Long Island, New York, July 4, 1884. Inquiry held at New York, July 29, 1884. Master in default for neglecting the lead. Certificate cancelled; recommended for its return after a period of six months, and for the grant of one as mate in the meantime.

2275. *Uncas*, barque; stranded behind the island De Los Huevos, near Los Vilos, June 18, 1884. Inquiry held at Valparaiso, June 30, 1884. Master to blame for loss of vessel. Certificate suspended for six months; recommended for one as mate.

2276. *Pateena*, s.s., and *Goldhunter*, lighter; in collision in the River Yarra, February 5, 1884. Inquiry held at Melbourne, March 14, 1884. Person in charge of the *Goldhunter* to blame.

2281. *Marlborough*, s.s.; stranded on a reef off Hainan Island, June 12, 1884. Inquiry held at Hong Kong, July 15, 1884. Loss of vessel due to careless navigation on part of master. Certificate suspended for one year; recommended for one as mate.

2283. *Posang*, s.s.; stranded near Fisherman's Group and Video Island, May 27, 1884. Inquiry held at Shanghai, June 20, 1884. Master misled as to his position by the soundings, and not to blame.

2286. *Surprise*, schooner; stranded on Great Seal Rock, June 18, 1884. Inquiry held at Sydney, June 30, 1884. Casualty due

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to master standing too close to the rock before attempting to stay. Certificate suspended for six months.

2288. *Coromandel*, s.s., and *Norah*, scow; in collision near Brown's Island, New Zealand, April 4, 1884. Inquiry held at Auckland, May 23, 1884. Master of *Coromandel* in default for leaving the deck, the wheel being in charge of an inexperienced boy. Certificate suspended for four months, and ordered to pay costs of the inquiry.

2289. *Syria*, ship; wrecked on Nasilai Reef, Viti Levu, May 11, 1884, when 56 Coolies and 3 Lascars perished. Inquiry held at Fiji, June 17, 1884. Loss occasioned by the default of the master. Certificate suspended for nine months.

2290. *Kangaroo*, s.s.; lost near Bowler's Reef, Cape Campbell, May 2, 1884. Inquiry held at Wellington, N.Z., May 31, 1884. Master to blame for taking vessel much nearer to the shore than was prudent or justified by the sailing directions. Certificate suspended for three months, and ordered to pay costs of the inquiry.

2293. *Rowena*, s.s., and *Kauri*, scow; in collision between Port Charles and Waikawan, April 22, 1884. Inquiry held at Auckland, May 23, 1884. Casualty caused by master of *Rowena* leaving deck and not seeing that a competent man was left in charge. Certificate suspended for two months and ordered to pay the costs of the Inquiry.

2294. *Kovno*, s.s., and *Ayhios Nicolaos*, Greek bracenia; in collision in the passage of Andros and Cape D'Oro, August 12, 1884, when latter vessel sank and five passengers were drowned. Inquiry held at Malta, August 18, 1884. Collision due to default of second mate of *Kovno* in neglecting to keep a look-out. Certificate suspended for six months.

2299. *Prosper Colon*, schooner; wrecked on Bellinger Bar, May 14, 1884. Inquiry held at Sydney, July 7, 1884. Loss due to insufficient power of steam drogher which attempted to tow vessel to sea.

2302. *Pendle Hill*, barquentine; wrecked on Cockburn Reef, May 9, 1884. Inquiry held at Cooktown, June 3, 1884. Master to blame for attempting to navigate vessel in this dangerous locality

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at night, in dark, squally weather. Certificate suspended for three months. Mate censured for not seeing that a proper look-out was kept.

2303. *Riversdale*, ship; stranded off False Point, Divi, April 29, 1884. Inquiry held at Madras, July 7, 1884. Stranding caused by negligent and reckless navigation on part of master and first mate. Certificate of former suspended for twelve months; of latter, for three months.

2304. *W. H. Harkess*, barque; abandoned with cargo of coals on fire, June 8, 1884, whilst on voyage from Liverpool to Valparaiso. Inquiry held in the Falkland Islands, June 20, 1884. Ignition of cargo attributed to the wet condition in which the coals were shipped.

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## GENERAL.

MARINE BORERS.—A most interesting lecture has been recently delivered at the Edinburgh Forestry Exhibition by Professor M'Intosh, in which he called attention to the serious damage inflicted upon submarine woodwork by marine borers. Among the most destructive of this class are the crabs known as the *Cheluria terebrans* and the *Limnoria lignorum*, or Scotch gribble, of which the former is the most mischievous, as being able to make larger and more oblique excavations. The ravages made by the gribble in the fir beams that supported the beacon on the Bell Rock were described by Mr. Robert Stevenson a long time ago, the rate of destruction being an inch a year. It was thought that the gribble paid attention only to timber, but it is now known that it is equally unremitting in its attentions to the sheaths of guttapercha and other materials which protect submarine cables. The ravages of the gribble, great as they are, are surpassed by those of the *xylophaga*, a very small bivalve occupying a position between the stone and rock boring *pholas* and the wood boring *teredo*. The tunnels which the latter made into timber were of astonishing length, varying from one to two feet in the common *teredo* to three feet in the case of the great *teredo*. Up to the present time no wood has been found capable of resisting the attacks of these little creatures; and

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although various remedies have been tried in the shape of immersion of the wood in silicated lime, bitumen, and creosote, by forcing them under great pressure into the tissue, the latter material was the only one which had been found to be efficacious, while mechanically nothing short of metallic sheathing protects the timber. On the other hand, the Professor pointed out that the borers were frequently useful in their proper place, and particularly in the case of drifted timber and old wrecks, which would be very dangerous to navigation were they not rapidly disintegrated by the action of the *teredo*. The subject is one that is worthy of very close attention at the hands of those scientific men who will be connected with the marine laboratories now being established.

Passage of Vessels through Straits of Kertch-Yenikale.—The following rules concerning the passage of vessels through the Straits of Kertch-Yenikale have been communicated by the Russian Minister:—1. Masters of all vessels passing through the channel and straits are hereby instructed to obey and strictly fulfil every order issued by the commander of the guard ship concerning the navigation. Masters of vessels having gone through Quarantine and Custom House formalities present their certificates for free passage to the commander of the guard ship, and then proceed to the Sea of Azov, after having taken a pilot on board. 2. Masters of vessels coming from the Sea of Azov are bound on entering the straits of Kertch-Yenikale to stop near the guard ship, lying at the north extremity of the channel, to present their papers to the commander of the guard ship to take a pilot, to inscribe with their own hand in the pilot's book the ship's draught, and having received the commander's permit can then only pass through the channel with the pilot on board. 3. In conformity with the rules for the observation of incorporate pilots annexed to the article 1,215 of the 11th volume of the Code of Laws of the Commercial statute according to the amendment of 1868, every master will be liable to a fine as follows:—75 rubles for not taking a pilot on board; 10 rubles per inch above the declared draught for false declaration. The indemnity to private persons or government is to be paid in proportion to the damage incurred.

The master of the iron barque *Firth of Lorn*, from Lyttleton, N.Z., reports that on July 22, in lat. 29° 01′ N., long. 39° 40′ W.,

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a floating spar was seen to which a boat was sent. The spar was found to be valueless, but on the approach of the boat a large shoal of fish abandoned it and commenced eating the barnacles on the ship's bottom. This continued for several days until the bottom was quite cleared of barnacles, when the fish left the vessel. The effect of this was to increase the speed of the vessel two knots per hour, much to the captain's gratification. The fish were about 8 inches long and were good eating, tasting like whiting.

ENGLAND.—EAST COAST.—LONDON, HARWICH, AND RAMSGATE DISTRICTS.—SPECIAL LIFEBOAT SIGNALS.—The Trinity House, London, has given Notice, that the following signals are established at light-vessels and pile lighthouses in the London, Harwich, and Ramsgate districts:—In order to communicate that a vessel is on either of the undermentioned sands, the arranged signal is to be fired from the light-vessel or pile lighthouse, and repeated until answered from an inner light-vessel or Coast-guard station, or by a signal from the lifeboat on arriving at the vessel indicated.

| SANDS. | SIGNAL. | INTERVAL OF FIRING. | TO BE REPEATED EVERY |
|---|---|---|---|
| Kentish Knock and S.W. part of Long Sand ... ... | One gun and one rocket | | Ten minutes |
| N.E. part of Long Sand and Sunk ... | Two guns and two rockets | Five seconds | Ten ,, |
| Gunfleet and Cork ... | Two guns and two rockets | Twenty ,, | Ten ,, |
| Shipwash, Whiting, and Bawdsey ... | One gun and one rocket | | Five ,, |
| Sands westward of line joining Maplin and Girdler lights ... | Two guns and two rockets | Thirty ,, | Ten ,, |
| Sands eastward of line joining Maplin and Girdler lights ... | Two guns and two rockets | Two minutes | Fifteen ,, |
| Goodwin and Brake... | One gun and one rocket | | Five ,, |

Two guns and two rockets fired from a light-vessel at intervals of five minutes, and repeated every fifteen minutes, indicate that assistance is required by her, or by a vessel seen in distress not on the sands above referred to.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. XI.

NOVEMBER, 1884.

## YACHTS AND YACHT RACING IN 1884.

IN a paper on the subject of yacht sailing in 1884 at the opening of the season, we alluded to the fact that there were no less than three new racers of the largest size in the field, which, with the favourites of the last season, would make up a goodly show of heavy weights, and afford some excellent sport in the more important contests. Our expectations have been quite realised in this respect, but the general interest which has attended the yachting season of 1884 is largely due to quite other reasons, and the year has proved to be remarkable in other respects than in the advent of so many competitors for honours. The year 1884 has seen the finest summer we have had for many years past, cloudless skies have been as common on our coasts as they usually are on the shores of the Mediterranean, and it is said that not one important race has been this season sailed under reefed canvas. Further, the cholera epidemic which has inflicted so much misery and suffering upon the south of Europe, has also by the consequent revival of absurd quarantine regulations led Englishmen generally to keep themselves and their yachts near home. All these circumstances have combined to increase public interest in yachting, and to give greater zest to the contests.



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The three new vessels have not been the greatest successes; perhaps better fortune is in store for them another year, when small defects, such as only come out on trial, have been remedied, and improvements suggested by experience have been made. Again, the present style of construction has been now so far developed that, although it has been said with truth that the last vessels have the heaviest lead keels, they are only heavier by a few tons than those of a year or two ago; and as the possible limits of lead ballast is nearly reached, other characteristics regain their legitimate importance. It may be, too, that the light breezes of 1884 did not bring into play the excessive stability of the last new departures, and that, under more favourable circumstances in this respect, their great powers of standing up under sail will gain them the victory. Of the three, the *Genesta* has proved the most successful, and has been victorious in as many as seventeen contests, but of the number only seven were first prizes. It is said that she will be given more sail before another season, experience having shown that she can stand much larger demands upon her stability than have yet been made.

The *Marguerite* has so far been a failure, but the vessel of most extreme type the *Irex*, which has the distinction of being the best ballasted vessel afloat, her lead keel reaching the unprecedented weight of 72 tons, although out of twenty-nine starts she secured but nine prizes, yet as a Queen's cup was one of the number, her winnings for the year amounted to £600. One of last year's Clyde-built vessels, the *Marjorie*, which has, during the winter, been altered in the direction of increase of spars and sail spread, has, this year, been very successful, and her winnings have amounted to over £900. This has however, been exceeded by the *Jara*, a forty-ton yacht built last year by Hatcher, Clifford & Co., of Southampton. The *Jara* is a composite vessel with steel frames and wood plank, and is classed 18 years Lloyd's. Her registered dimensions are—length, 70·1; breadth, 11·55; depth, 10·15; register tonnage, 40·36; Thames tonnage, 42. She was designed by Mr. Beavor Webb, and hails from Southampton, being the property of Mr. Francis Taylor, of Diss, Norfolk. Like the *Marjorie*,

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the *Jara* has been altered, and improved as a result of the experience gained during last season. She has this year sailed in 39 contests and has won 19 first prizes and 4 others, the gross value of her winnings being £1,040. Her great success may, it is thought, revive the forty-ton class of yacht which has been out of fashion for some few years past, most of the new vessels being either of the largest class of racers or quite small vessels. Among the latter, the *Ulerin*, a wooden vessel of ten tons and dimensions—length, 43·2; breadth, 7·2; depth, 7·, distinguished herself and her designer, Mr. G. L. Watson, by winning 26 prizes in 29 races, and securing for her owner a total of £350.

An able writer in the *Times*, to whom we are indebted for some of the figures given above, has the following interesting remarks upon the question of sails, which is now of so much interest, that *Lloyd's Yacht Register* gives the names of the sailmakers as well as of the builders and designers for each vessel in the book. He says:—"The advance made in the sailmaker's art has been on all fours with designing and ballasting, and the sit of a mainsail now occupies the thoughts of a racing skipper not a little. The latest innovation in the sail outfit is the jackyard-topsail, which is a really wonderful sail compared to the old time ballooner. It is not many years ago that a sixty-ton racing cutter carried an awkward dangerous specimen of a topsail, with a 60 feet yard, while the longest of the new type made is not over 46 feet at the head, and consequent on the shape in which it is cut, there is far greater area in the sail. The new fashioned topsails have been carried many times during the season in a fresh working breeze; in fact, it is astonishing how long they might be dragged on; while in light airs they are now simply invaluable both on and off the wind. . . . As a factor to success in racing contests, the important part canvas plays is now generally recognised. It was evidenced in the case of the *Wendur* this season, which was racing with a two-year-old mainsail, and it may be said that she never showed her true form in consequence, while the advantage of a sail at its best was apparent in the case of the *Lorna*, when she met *Irex*, *Genesta*, *Marjorie*, and *Jara* at Plymouth, the sails of which showed the wear and tear of the races round the coast,



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while in the intermediate time from Dover, *Lorna's* sails had been comparatively in lavender. In the present age when yachts sail from thirty to forty races between May and September, a sail cannot be made to last more than the season."

Some good contests have taken place this year between cruisers, but it is said the difficulty has been felt as much as ever, of so defining the cruiser as to exclude all racing machines. In our former article we adverted to the well-worn, but ever interesting, because so important, topic of yacht measurement, as being the cause of the separation of racers from pleasure craft by features which render the former all but useless for any other purpose except winning prizes, and should certainly be distinctive enough. We suppose the difficulty arises from the fact that old racers which have been superseded by the last developments, would we could say improvements, must be put to some use or broken up, and they become cruisers when they are no longer capable of winning prizes. *Le Yacht*, a short time since, in an able article on the subject of English yacht construction, suggested that the loss of the *Mignonette* is an exemplification of the fact that yachts built to race are not trustworthy sea boats. The disaster to which we refer has unfortunately attained a widespread notoriety from the horrible incidents attending the loss of the vessel, and the consideration of them has, perhaps, rather drawn attention from the circumstances under which the yacht foundered but a few minutes after being struck by a sea. The *Mignonette* was built by R. Aldons, at Brightlingsea, in 1867, and was 31 tons, Thames measurement, but only 19·43 register tonnage. Her dimensions were—length, 52; breadth, 12·1; depth, 7·4. She was being taken out to Sydney, and had left Southampton on the 19th May. The date at which she foundered was the 5th July, and it is said that she had experienced bad weather for some few days previous. *Le Yacht* does not hesitate to attribute the loss of the vessel to the fact that the heavy lead keel causing excessive stability had brought severe strains upon the structure, which after a long sea voyage had much weakened it, so that it was unable to bear the shock caused by the stroke of the sea. The master, however, attributes the disaster rather to the age of the vessel. She was, as we have said, over

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17 years old, and if she had not been properly examined and repaired, would very likely not be in condition for a long sea voyage. Excessive stability would, in a rough sea, subject the vessel to severe strains, all the worse when she was compelled to have but little sail spread, but without knowing much more about her than has been made public, it is impossible to form any conclusion as to the cause of the loss. Anyhow, our French contemporary is right in warning his fellow countrymen against the English rules of yacht measurement.

We have more than once adverted to the increased interest taken in yachting: it may be of some interest to our readers to be in possession of figures on the subject, which we have compiled chiefly from the *Yacht Register*, now published annually in connection with Lloyd's Register. The official registry of shipping by the Board of Trade does not furnish full information on the subject, seeing that very few of the smaller classes of pleasure craft are registered as British ships. *Lloyd's Yacht Register* for the current year contains the names of 3,790 yachts, but of these over 700 are American, and many others are included which hail from Continental ports. Considering only vessels under the English flag, that is, hailing from ports in the United Kingdom and the Colonies, there are of wood-sailing yachts the following numbers:—

| | Registered as British Ships. | Not Registered. | Total. |
|---|---|---|---|
| 1. Under 10 tons ... | 61 | 649 | 710 |
| 2. 10 to 20 ,, ... | 146 | 309 | 455 |
| 3. 20 ,, 50 ,, ... | 342 | 72 | 414 |
| 4. 40 ,, 100 ,, ... | 198 | 8 | 206 |
| 5. 100 tons and over ... | 145 | — | 145 |
| | | Total | 1930 |

Lloyd's Society have endeavoured to make the list as complete as possible, and probably for all but the smallest class it is practically complete, but it is obvious that in regard to vessels below 10 tons, it must be very difficult to distinguish between mere boats and craft of sufficient importance to have a place in the yacht list. The tonnage

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regarded in the classification is that used by the Yacht Registry, which is the Thames rule of measurement, the register tonnage being only known in the case of vessels which have been measured by the Board of Trade for registry as British ships. There is but a comparatively small number of iron and composite sailing yachts. The British vessels given in the *Yacht Register* are as follows:—

| | Iron. | Steel. | Composite. |
|---|---|---|---|
| Under 10 tons ... ... | — | 1 | 4 |
| 10 to 50 ,, ... ... ... | 7 | 1 | 10 |
| 50 ,, 100 ,, ... ... ... | 2 | 1 | 7 |
| 100 tons and over ... ... | — | — | 8 |

In steamers, as might be expected, the proportion of iron and composite vessels is much greater. The numbers of wood English screw-steamers given are as follows:—

| | Registered as British Ships. | Total. |
|---|---|---|
| Under 10 tons ... ... ... | 6 ... | 108 |
| 10 to 20 ,, ... ... ... | 13 ... | 96 |
| 20 ,, 50 ,, ... ... ... | 38 ... | 84 |
| 50 ,, 100 ,, ... ... ... | 16 ... | 27 |
| 100 ,, 300 ,, ... ... ... | 21 ... | 21 |
| 300 tons and over ... ... ... | 8 ... | 8 |
| | Total | 344 |

The number of iron, steel, and composite screw steamers are:—

| | Iron. | Steel. | Composite. |
|---|---|---|---|
| Under 10 tons ... ... | 5 | 7 | 0 |
| 10 and under 20 ,, ... ... | 9 | 7 | 0 |
| 20 ,, 50 ,, ... ... | 27 | 5 | 4 |
| 50 ,, 100 ,, ... ... | 26 | 8 | 4 |
| 100 ,, 300 ... ... | 52 | 5 | 3 |
| 300 and over ... ... ... | 38 | 4 | 7 |
| Total ... . . ... | 157 | 36 | 18 |

Probably many of the smaller class of vessels, which are hardly more than steam launches, have not found a place in the *Yacht Register*. Almost all the iron, steel, and composite steam

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yachts are registered as British ships, with the exception of those under 20 tons. It may be remarked that we have adhered to the Thames measurement tonnage all through these figures for the purposes of comparison. The gross register tonnage would be about one-third less; the net register tonnage of steamers, as is well known, varies very much in proportion to the gross.

It remains to be said further that a small number of paddle-steamers appear in the *Yacht Register*, five wooden vessels all below 50 tons, and four iron vessels, of which three are over 50 tons.

In addition to steamers and sailing ships we have to mention vessels fitted for propulsion by electricity. Of these there are three small vessels, two of which are put down as of two tons, one of one ton, and all three built of wood.

We have, in the preceding figures, purposely confined ourselves to English yachts. The number of foreign vessels of which particulars are given in Lloyd's is small, except in the case of American yachts to which we make special reference. With a view of supplementing to some extent the preceding figures, we may mention that in the current French Yacht List, published by Mm. R. and B. Clerc, of Rue St. Lazaire, Paris, it is stated that the number of French yachts over five tons is 794, with an aggregate tonnage of 17,000. There are, it is said, 73 steam yachts, suitable for a long sea voyage, with an aggregate tonnage of 9,000.

*Lloyd's Yacht Register* has now reached its seventh year, and it may be interesting to put together the figures of classed yachts. While the numbers, as compared with the total number of yachts, are still very small, it is to be remarked that the classed yachts are mostly those of large tonnage, and we believe the number is steadily increasing. Most of the new racers are classed, and a large proportion of the vessels built within the past year, steam as well as sailing, are also classed. By going to a respectable builder there is no doubt that a good article can be obtained with or without Lloyd's class; but it will certainly be found in years to come a great advantage in offering a vessel for sale, to say that she was built to class with Lloyd's, and has had her class kept up; and this we mention because yachts certainly change hands quite as often as do larger craft.

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In the present issue of the *Register* there are 142 wood sailing yachts classed, with an aggregate tonnage of 11,500; of these 5, with a tonnage of 400, are owned by foreigners. There are 23 wood steamers with aggregate tonnage of 3,050 classed, having among them 5 foreign vessels with 750. The iron and steel classed vessels are much more numerous in proportion; there are 80 classed amounting to 19,600 tons, of which 18, with 3,900 tons, are foreign. The classed sailing vessels of iron and steel are 5 in number, amounting to 550 tons. Of composite vessels there are classed 11 steamers and 10 sailing vessels, with aggregate tonnage of 3,200 and 900 respectively.

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## CHARTS AND LIGHTS.

A RECENT letter in the *Shipping and Mercantile Gazette* bears out to a great extent the views we have from time to time put forward in these pages in reference to the diffusion of nautical information among merchant captains and officers. The subject is one of the highest importance to our Mercantile Marine, and yet hitherto it has received scant attention from those whose duty and interest should stimulate them to move in the matter. The letter is a practical one and deserves consideration, therefore we reprint it as follows :—

"*To the Editor of the 'Shipping and Mercantile Gazette.'*

"Sir,—When in England last voyage I received from the Custom House about 50 notices of alterations in lights, &c. The rapid manner in which lights are altered from fixed to flashing, &c., &c., is truly astounding. Now, mistaking a light sometimes means loss of ship and cargo, and a Board of Trade inquiry, when probably the Wreck Commissioner, with the advice of Assessors, will give the person who is in charge of the vessel six months to walk about and improve his information. We pay heavy light dues, and surely the time has come when all shipmasters should be entitled to an official and trustworthy book containing a description of the lights

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of the world, and published by the order of some known authority, such as the Board of Trade, for the use of the Mercantile Marine. The same remarks also apply to charts. Admiralty charts are not suited for mercantile steam navigation; many shipmasters prefer others that are sold by private firms. What we want, and should insist upon having, is that charts, light books, and other works which are continually undergoing changes and revisions, and which are indispensable in navigation, should be issued, corrected up to date, by order of the Board of Trade, so that there should be an end put to the present uncertainty. The information is at present scattered about in a variety of works, which, like sextants and chronometers, you can buy by the gross at all store dealers and pawnshops of any seaport town of England. During the last agitation throughout England, British shipmasters were represented as careless and bad navigators, and called other very hard names to their serious detriment, thus placing them in a wrong light before people who not knowing much about nautical affairs, yet were financially largely interested in shipping. Very little, however, is ever done to help shipmasters in their arduous work. Consequently three-fourths of our best shipmasters are disgusted with the whole service.—Yours, &c.,

"THE MAN ON THE BRIDGE.

"Sulina, October 9, 1884."

We certainly do not agree with all that "The Man on the Bridge" says, but we do think that the commercial shipmaster is decidedly at a disadvantage as compared with navigating officers in the Royal Navy, in respect of facilities, which we do information regarding changes in lights, alterey would be ready and hydrographic surveys in various pr
It is reasonable to suppose that all official inf
jects communicated to this country by
public property, and should be r
commercial marine. It must also
the Hydrographic Office of the Ad
staff of the Royal Navy, are all m
and that the results obtained by

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to be promulgated in the merchant service quite as much as in the Royal Navy, having regard to the vast commercial and national interests represented by our Mercantile Marine. But, unfortunately, it is not so, and as a matter of fact, the merchant captain has to seek the information he wants from a variety of sources, he finds few facilities to aid him in his search, and so far as official information is concerned, he actually finds many obstacles in his way. We need not particularize these obstacles, but we may assert without fear of contradiction that at the Admiralty the right of the Mercantile Marine of this country to as full a share of the hydrographic and other information reaching their hands as the Royal Navy enjoys, has not yet been admitted. If we consider the practice of other countries we find that facilities are afforded—indeed no one who gives the whole matter a little consideration can fail to see that the tendency of other nations is to give their commercial marine every possible aid towards the successful navigation of their vessels and the development of shipping trade. But without adopting the principle of giving bounties to our shipping, a principle to our mind vicious in the extreme, we would urge that our Government ought by every means in its power to render such assistance to its merchant navy as will assist its ships to make their voyages in safety, to extend their commercial feelers into regions not yet opened up, and to keep ahead of all other maritime nations of the world.

In addition to this it appears to us that the proceedings at some wreck inquiries indicate a tendency on the part of some masters to attribute their losses to incorrect charts, or to the want of proper sailing directions.

Now, this question is a tolerably large one, and embraces more issues than appear at first sight. No one wants on the one hand to kill private enterprise by insisting on the general use of Admiralty charts, and on the other hand it is not desirable to leave the matter entirely in the hands of the private chart-sellers. It would be unwise to do anything to check the issue of the hydrographic publications which emanate from the Admiralty or from the various nautical publishers in London, Liverpool, and other great ports. They are all valuable compilations very carefully prepared,

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the details being obtained from various sources in all parts of the world, from the fugitive notes of the merchant captain to the more elaborate notices issued by executive departments of various Governments. The point then appears to be, how to reconcile any conflicting announcements which may be made by different authorities or publishers, and then how to bring this ever-changing information within the immediate reach of mariners. It may be that officialism will say, "*laissez faire*," and, possibly, private publishers will echo this recommendation. But, at the risk of offending both parties, we venture to suggest that an independent establishment, not directly connected with the official executive on the one hand, nor with the nautical publishing trade on the other, might be brought into existence, where masters might learn all the changes which had taken place up to the latest date, by means of which they could correct their charts, or learn the necessity of obtaining new ones, and where there might be a library of reference suitable to the shipmaster's requirements. This might well be an adjunct to a Mercantile Marine College, the establishment of which we have advocated in these pages from time to time. The details of the proposition we are not now concerned with, but we offer the suggestion in the interests of shipowners and shipmasters, as one which we believe would conduce to safety and efficiency in navigation. Chart-publishers need not fear that this would be detrimental to their interests; indeed, it would have the effect of making their publications more widely known, and it would afford facilities for the simultaneous correction of all charts. These would be unquestionable advantages to the merchant captain, which we do not doubt the present Hydrographer of the Navy would be ready at once to admit.

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# A FURTHER CONTRIBUTION TO THE QUESTION OF STABILITY.

AT the meetings of the Institution of Naval Architects in the spring of this year, there was quite a glut of papers on the question of stability, and indeed the whole thing was so palpably overdone that probably more useful discussion would have taken place upon the subject if, instead of six papers, there had been half that number. This was perhaps unfortunate for some of the writers, whose only fault was, that they had written well upon a subject to which too many other people had been simultaneously directing their attention. Some of these contributions dealt with the question of curves of stability at different draughts, a subject which, although it had been previously considered, had been but little recognised in practical calculations till recently. It is an ordinary part of the calculation of a ship's stability to obtain the positions of centres of buoyancy and metacentres at various draughts which, put together in the shape of what is known as the "metacentric diagram" enable the metacentre to be obtained for any intermediate draught whatever, and so the metacentric stability of the ship, if the height of her centre of gravity be known. To obtain corresponding information as to stability at definite angles of inclination, such as is given by the ordinary curve of stability, it has been recently proposed that cross curves should be drawn, that is, instead of a curve showing the stability at a given draught and at various angles of inclination being at once obtained, it is proposed to first work out a series of curves, each of which should show the stability at the same angle but for various draughts, so that from ordinates measured in succession from each such curve it might be possible at any time to obtain readily a curve of stability for any draught whatever. By means of these data, if the centre of gravity is known, there is a complete account of the stability of the ship for any draught, and for any angle of inclination. The preliminary work necessary to the obtaining such a complete

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account of the stability of a ship, even with all the saving of labour possible, by the use of either of the methods made public in these papers, and by the aid of the mechanical integrator, is still very great, and is only practicable in cases where a large scientific staff is employed.

Mr. W. Denny, of the Clyde, in an able paper on "Cross Curves of Stability, &c.," gave ample proof that himself and staff were, as usual, to the front in grappling with this question. It is well known among naval architects that Messrs. Denny have in their establishment at Dumbarton a scientific staff and appliances far in advance of anything else of the kind in the country, and his paper indicated the unsparing energy with which any new departure in the science connected with naval architecture is at once followed up and worked out.

We have before us a further contribution to the question of stability by two members of Messrs. Denny's staff, in the paper, "On Approximation to Curves of Stability from Data for known Ships," by Messrs. F. P. Purvis and B. Kindermann. This was presented at the annual meeting of this year of the Institution of Engineers and Shipbuilders in Scotland. The object of the paper, say its authors, "is to introduce a method of approximation by means of which the data obtained for one ship may be made available for estimating the stability of another. The word introduce is used advisedly, the results at present given being obtained from one ship only. It will be necessary that these results should be supplemented by results obtained from other ships of extreme variations of form, and one object of this paper is to suggest to other investigators to undertake the labour thus involved with a view to the ultimate good to be derived therefrom."

The design of a ship of an ordinary type is first taken and a complete account of her stability worked out on the assumption that her centre of gravity coincides with her metacentre. The length is then eliminated from the work by the consideration that it does not affect the stability if the condition be observed that the same *type* be retained throughout, that is, if length be altered, it must be done not by lengthening the midship body, or by fining the ends, but by spreading out the ship uniformly over the greater, or

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contracting her uniformly over the smaller length. Next, the data are all modified by a simple rule given, as that they apply to a ship of 100 ft. beam, with a depth in proportion. The depth stated in feet, is thus, in the same figures, a percentage of the breadth. The next step is to vary the depth successively to various percentages of the breadth, and also the draught in terms of the depth, and then obtain the modifications in the figures of the stability corresponding thereto. Curves are constructed, a separate set for each angle inclination embodying all the numerical results, and thus from the calculations of the type ship are furnished data from which an account may be obtained of the stability of any vessel in which the same typical form is retained, but in which the ratio of breadth to depth varies. The sheer is an important feature of the type, and may much affect the result; but if the actual sheer of the ship differs to any extent from the type ship, a means of correction is provided. It is believed by the authors of this interesting paper, which certainly is the result of much labour and thought, that if a number of sets of calculations be made for marked types of ships so as well to cover the usual forms, it will ultimately be easy, by means of the tabulated results, put together and applied by a few simple rules, to obtain readily a sufficiently near approximation to the curve of stability of any vessel at any draught.

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## BRITISH PROTECTORATE OVER NEW GUINEA.

IF our readers turn to the volume of the *Nautical Magazine* for 1883, they will find an important article on New Guinea, in which we urgently pressed the necessity for taking possession of so much of the southern part of that island as was needful for our interests in connection with its relation and position in respect to the Australian Colonies. "The main reason for our being in possession of it" we plainly stated to be, "that no other power could be allowed to command the line of communication between Australia and China on the one hand, and between ourselves and any portion of Australia

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on the other." In accordance with the statement made by Mr. Gladstone in the House of Commons at the end of last session, steps have now been taken for proclaiming the British protectorate over all the southern coasts of New Guinea, eastwards from the recognised boundary of the Dutch claim, viz., the meridian of 141° E. Instructions have been sent by telegraph to the Commodore on the Australian station to proceed to New Guinea and proclaim the protectorate, which will include the islands adjacent to the southern and eastern part of New Guinea. But settlement within the protectorate will not at present be permitted. It is thus an accomplished fact that we have the entire command of Torres Straits.

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## FAIR ISLAND, ORKNEYS AND SHETLAND.

THE following communication on this subject appears in the *Weser Zeitung* :—

"The British North Sea Coast, inclusive of the Orkney and Shetland Islands, demands on an average the yearly sacrifice of six German ocean ships, and about ten times that number belonging to other nationalities. By far the larger proportion of these losses occur on the eastern shores of the two island groups between which vessels from the Baltic and North Sea find their way to the Atlantic Ocean. The strait between North Ronaldshay and Sumburgh Head is only a little more than forty nautical miles broad, and is, besides, nearly in its centre blocked by a very dangerous obstruction. Fair Island extends N.E. to S.W., about three nautical miles long, and is about one-and-a-half broad. The shore is high, rugged, and precipitous, while the surrounding sea is fifty to sixty metres deep. Girt by cliffs and reefs, of which the Out Stack, lying about a third of a mile from the south end of the island, is the most dangerous, the rocky shore possesses just one wretched anchoring place, which bears the pretentious name of North Haven. It is a creek, where at most two small ships, drawing under twelve feet of water, may lie-to and moor to a piece of rock which rises in the middle of the

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bay. South-west of this creek rises the nearly circular conically-shaped promontory of Sheep's Craig to a height of 480 feet. The island itself rises in three sharply defined elevations, the highest of which is known as Ward Hill, 713 feet above the sea level, and in clear weather—a rare event—is visible at thirty-six nautical miles distance. The 800 and odd souls by whom the island is peopled have clustered round a bay in the southern part of the island. Such is a brief description of the inhospitable and dangerous island, which, beyond its natural features, possesses none of the modern beacons and helps to navigation; no lighthouse guides or warns in the dark nights, and no signal sounds during foggy or cloudy weather. It is scarcely to be wondered at, therefore, that numerous shipwrecks occur here and in the neighbourhood, and that, as a rule, these take the form of disasters involving total loss of ship and cargo, and in most cases, also of human lives. As early as the winter of 1588, the Duke of Medina, commander of the Spanish Armada, with 200 of his shipwrecked crew, who reached this inhospitable shore with their bare lives, experienced here the extreme of privation; and their successors have been legion. Need we recall the sufferings endured when the Bremen emigrant ship *Lessing* stranded on the Fair Island? At that time the *Nautische Verein*, of Bremerhaven, urgently, but vainly pressed upon the Commissioners of Northern Lighthouses the necessity of placing a beacon on the island in the interest of humanity. 'No advantage,' it was said, 'could be derived from placing a lighthouse on Fair Island, as it would be rarely seen on account of the prevailing thick weather. It would, on the other hand, lead to an increase in the number of accidents, as captains would be induced to make for Fair Island and its light instead of avoiding them,' and so on. Now, we have a high opinion of the lighthouses of the Northern Lighthouse Commissioners, or rather of those of their engineers, the Messrs. Stevenson—father, son, and grandson—who, in three successive generations, have erected them around the coast of Scotland. As regards the lighting of Fair Island, however, we take leave to express a decidedly opposite view, and urgently appeal to the Commissioners, in the interests of humanity, of navigation, and of commerce, to place a beacon light on this dark island.

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The stranding of the Nova Scotian ship *Watch* in 1877, as well as that of the German ship *Marco Polo* recently, shows only too clearly the perilous character of the place. Without mentioning other disasters, such as those of the *Charlotte*, the *Bremen*, and many others, this much is clear: if a light had been shining, or a fog signal sounding on Fair Island, neither the *Lessing*, the *Watch*, nor the *Marco Polo* would have stranded. In July, 1877, Commander J. F. Prowse, R.N., received orders to examine Fair Island and its vicinity. He reported that the currents were highly dangerous, confusing, and uncertain, and recommended the erection of two lighthouses, one at the north and south ends of the island respectively, and of a powerful fog-horn at the highest point. Has anything been done as yet? Nothing at all, and that is not quite humane. The time is happily passed when the inhabitants of those islands used to think it great good fortune to be able to fence their gardens with cedar and mahogany from stranded ships, and to drink the claret obtained in the same way to their oatmeal porridge, as Mr. Stevenson credibly informs. Now they urgently beg, in their own interest, and in that of commerce and navigation, as well as of humanity, that a signal be placed on Fair Island. We also join our appeal to theirs, and point in support of it to the disasters that have repeatedly and recently occurred."

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## TELEGRAPHIC COMMUNICATION.

THE following letter, urging the necessity for a more extended system of telegraphic communication on behalf of shipping interests, has been addressed by the Committee of Lloyd's to the Postmaster-General:—

"Lloyd's, E.C., October 14.

"Sir,—I am instructed by the Committee of Lloyd's to beg that you will be good enough to inform the Postmaster-General that many more vessels than was formerly the case now make the passage from America round the north coast of Scotland; so much



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so that in consequence of the increased use made of this route, Lloyd's have lately established a signal station on the Pentland Firth.

"It appears that in case of distress or heavy weather vessels compelled to put in for refuge on this voyage when near the coast of the United Kingdom would probably make for Loch Eribol; and it has been pointed out that at present there is no telegraphic communication with Loch Eribol, so that when ships arrive there with reports of derelicts or vessels in distress, communication cannot be speedily made with tug-owners, shipowners, or underwriters interested, and thus assistance cannot be rapidly sent for the saving of life and property. The Committee of Lloyd's have addressed the Board of Trade upon this subject, and I am to beg that you will be good enough also to bring the matter to the serious attention of Mr. Fawcett.

"At the same time the Committee would wish to suggest that the maintenance of the telegraphic communication of the country as Government monopoly would appear to have prevented the extension of telegraphic communication as widely as might have been expected had the construction of telegraphs been left to private enterprise stimulated by public competition. I am to beg that you will be good enough to move Mr. Fawcett to allow it to be considered, whether some measures might not be taken by which licenses should be granted to private companies to institute telegraphic communication at their own risk in districts to which the Government system has not been extended.

"I am further to remark that it would appear in many countries, which are believed to be financially less prosperous than Great Britain, the benefits of telegraphic communication are more widely extended than in this country, as it seems that in Switzerland and Norway there are few villages which are not connected by wire with the telegraphic system of the State.

"I am, Sir, your obedient servant,

"H. M. Hozier, Secretary.

"The Secretary, General Post Office, E.C."

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# THE COMMERCIAL CODE OF RUSSIA.

(*Continued.*)

## PART III.

### *On Bottomry and Averages or Maritime Losses.*

### CHAPTER I.

### *On Bottomry.**

1057. Bottomry is a contract for a money loan on the pledge of a ship or vessel, goods or cargo.

1058. A loan on the pledge of a part of the goods or the whole cargo is only permitted when the requisite assistance cannot be obtained on the pledge of the ship or vessel.

1059. A loan on the pledge of goods, as also the sale and† exchange of a part of the goods or cargo, is only permitted when the master cannot obtain the required assistance on the pledge of the ship.

1060. A master has no right to borrow money on the pledge of the ship, goods, or cargo, except in urgent need, and only in the following cases:—(1) when during the voyage there is urgent want of provisions; (2) when the ship has sustained damage, or the rigging has become unseaworthy; (3) when he has neither ready money, nor credit, or when he cannot obtain money on letters of credit, for the said necessities.

1061. If a master, for the repair of the ship during the voyage or for the purchase of necessary provisions, borrows money on the pledge of the goods or cargo, or sells or exchanges‡ part of the goods, he is bound to pay the owners, or those concerned, for the goods pledged or sold at the rate at which they might be sold in the place where the master had bound himself to deliver them. The owner of the goods is bound to pay the master the full freight

* See note to Art. 1062.

† This appears to contemplate either the utilization of cargo, such as timber, for repairing the ship, or a recompense for work, labour, and materials by payment in kind out of the cargo.

‡ See note to Art. 1059.



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stated in the contract, precisely as if the goods had been delivered at the place of destination.

1062. The indemnification of a creditor who has lent a master money on the pledge of a ship, goods, or cargoes is effected on the general rules for the indemnification of creditors having pledges.

It appears from this that there are no special laws for indemnification on bottomry bonds.*

## CHAPTER II.

### *On Borrowing Provisions at Sea.*

1063. Where provisions are urgently needed, the master of the ship may borrow them by mutual agreement with the master of another ship whom he meets on his voyage, and even against his will and without his consent should the latter, disregarding the laws of humanity, refuse to assist those in such need.

1064. A master, who, to avoid starvation, is compelled to take the necessary quantity of provisions for the maintenance of his crew from another master whom he meets, must conduct himself with the greatest circumspection, and by no means take more than the quantity of provisions actually necessary, in order not to expose the person from whom he took them to the risk of starvation.

1065. He (Art. 1064) must take the provisions by measure and weight, and leave with the master from whom he took them a written document, stating his name, the name of the ship, its owner, the places from which it sailed and to which it was bound, the quantity of provisions taken, and stipulations as to payment for them. He should receive a similar written document from the master from whom he took the provisions.

1066. On arrival of either of the ships at the first port, the master must present the written document left with him by the other master, at the Custom House, with a statement of the

* The second paragraph of this Article is a strangely indefinite one to appear in a Code. To follow its own form: "It appears from this that" bottomry as understood in England and most other countries does not exist in Russia, but that the contract to which Arts. 1057-1062 relate is rather one of mortgage.

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quantity of provisions he had on board the ship on sailing from the last port, and an explanation of the casualties or foul winds which delayed the voyage.

1067. Should it appear that the master, who took the provisions by force from the other master whom he met on the voyage, had insufficiently victualled himself on sailing from the port, or that no casualty occurred, he is liable for such negligence, in addition to paying for the loss or damage caused by him to the other ship, to punishment on the basis of Art. 1230 of the Penal Code (1866 ed.). When he takes more than the necessary quantity of provisions from the other master whom he meets, and thus deprives the other ship of necessary provisions, he is sentenced to the punishment defined in Art. 1630 of that Code.

## CHAPTER III.

### *On Average or Maritime Losses, Petty, Ordinary and Particular.*

1068. There are four species of maritime losses or averages:—(1) Petty average; (2) ordinary or particular average; (3)* great or general average; and (4)* the average arising from mutual damage.

### SECTION I.

### *On Petty Average or Maritime Damage.*

1069. Petty average or maritime damage caused to a ship, vessel, goods or cargo, are: expenses attending entrance into, or departure from a town, port, or harbour, such as pilotage and anchorage dues when required, fire and other taxes imposed under various names, the hire of boats and men to tow or track and other port expenses.

1070. Of the expenses under this head (Art. 1069), the owner or owners of the ship pay one-third, and the owner or owners of the goods or cargo two-thirds.

### SECTION II.

### *Of Simple and Particular Average or Maritime Losses.*

1071. Simple and particular average or maritime loss to a ship, goods, or cargo, are: losses by storms or other unexpected causes,

* These species of average are dealt with in the succeeding chapters (IV., V.).

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such as restraint or detention by the authorities, carelessness of the owner or his people, hired and not hired,* and through it the loss of cables, ropes, sails, anchors, masts and other equipments, or the loss of part of the goods or cargo; excessive consumption of provisions, or expenditure of stores by those on board.

1072. Should the ship decay or the cargo be damaged through its inherent properties, or through careless and improper packing, or should a liquid commence to ferment [lit. tumble about], turn sour, or leak, either of itself or in consequence of the insufficiency of the [cask or other] vessel containing it; such damage is reckoned as simple and particular average.

1073. In simple and particular average everyone bears his own loss and everything preserved or saved is given up to the owner.

## CHAPTER IV.

### *Of Great and General Average or Maritime Losses.*

1074. Great or general average, or maritime losses to a ship, goods, or cargo, are: losses incurred for the safety of the ship, men, and goods or cargo, such as: ransom from the hands of the enemy, damage sustained in defending the ship, or by cutting away the anchor, cables, masts, rigging, to avoid shipwreck and destruction, or by throwing overboard goods, cargo, or other articles to lighten the ship.

1075. Great and general average losses are paid by all who have a share in the ship, goods, or cargo, and this payment is reckoned by approximation to the account appended† to this Art.

1076. Damage sustained by ship, goods, or cargo, through stress of weather, is considered simple and particular average (Art. 1071). But if a mast be carried away‡ *by a storm* or, to

* This probably applies to such a case as damage caused by the negligence of a passenger.

† For this Appendix, which is a general average statement, see end of Code.

‡ This clause appears to be a special case of the earlier part of the Article and, as such, to relate to particular average. Probably what the compiler of the Code had on his mind, was the special case of the loss of a mast through pressure of sail, in endeavouring for the good of all concerned to escape from the enemy or get off a lee shore.

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avoid danger, or if to save the ship, goods, or cargo, a mast be cut away, and the stump remaining on the ship appears to be good and sound, such loss is considered great and general average.

1077. If to avoid danger, or for the preservation of the ship, goods, or cargo from shipwreck or destruction, it be necessary to cut away the anchor, cable, masts or rigging, the master, if he can, should give the first stroke with the axe; if he cannot, he should order the mate and two or three seamen and sailors to do this. Similarly, if to lighten the ship, it be necessary to jettison part of the goods or cargo, if there is a representative of the owner of the goods on board, he should, if he can, throw overboard the first thing; if he declines or draws back and the master recognizes the necessity for it, he orders two or three seamen or sailors to throw the goods overboard. In this case, it is necessary, so far as circumstances permit, to jettison such goods or cargo, as are least valuable and preserve what are more valuable.

1078. If there happen to be on board a merchant ship, arms or ammunition, provisions or other military or naval stores belonging to the State, they must not be jettisoned unless by the jettison of a portion the remainder can be saved; but this is only to be done with the greatest caution, as the master has to account strictly and is responsible for them.

1079. If to avoid danger, or for the safety of the ship, goods, or cargo, or to lighten the ship, it is necessary to jettison part of the goods, and through opening the hatchways damage is caused to the goods remaining on board the ship, this damage is considered as great and general average, and is paid according to the scale given in the Appendix to Art. 1075.

1080. Damage, detriment, or loss caused to a ship, goods, or cargo, in defending her against the enemy or pirates, is considered as great and general average or accident, and in this case is paid according to the same scale (Art. 1079).

1081. If in defending or protecting the ship from the enemy or pirates, a seaman or sailor be wounded or killed, his medical attendance and remuneration* is considered as great and general

* See Art. 1094.

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average, and is paid according to the scale defined in the Appendix to Art. 1075.

1082. The ransom of a ship, goods, or cargo from the hands of the enemy, or pirates, is considered as great and general average, and is paid according to the same scale (Art. 1081). The master is bound, if he ransoms, to bring* the sum necessary for ransom without delay.

1083. If, to avoid danger, or for the safety of the ship, or to bring it into a harbour, port, or roadstead, it be necessary to hire a lighter or other vessel (to lighten the ship); such expenses are considered as great and general average and are paid according to the scale given in the Appendix to Art. 1075.

1084. If, to avoid danger, or for the safety or lightening of the ship, too many goods are placed upon the lighter, or other transporting vessel, and damage, shipwreck, or destruction be caused to such transporting vessel, and the ship from which the goods were transhipped get into port, the damage, shipwreck, or destruction of the transport vessel is considered as great and general average, and is paid for according to the scale given in the Appendix to Art. 1075. But when the ship from which the goods were transhipped suffers shipwreck or destruction, and the transport vessel with the goods gets safely into port, the average is not considered as great and general, for the ship has been lost, and the goods or cargo are left to the person that owns them.

1085. If damage, detriment, or loss be caused to the ship, goods, or cargo, by the carelessness and want of caution of the master or seamen in loading, unloading, or stowing goods in the hold, or by negligence in closing the hatchways, or by neglect to pump the

* This Article appears difficult to understand, as the capturer would not let the property go without the ransom being paid, or security given. Possibly, the meaning is, that if the master consents to give a bond for the ransom money, he must pay it on presentation, *i. e.*, that the contract of ransom is valid and may be enforced by law. The practice in most countries has varied from time to time in respect of this matter, and is now governed in England by statute.—The Naval Prize Act, 1864, 27 & 28 Vict., c. 25, s. 45, and The Naval Discipline Act, 1866, 29 & 30 Vict., c. 109, s. 41.

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water out of the ship at the proper time; indemnification for this damage, detriment, or loss, must be placed to the account of the master and seamen in proportion to the fault and pay of each, as laid down above in Arts. 890, 902, 968, 972, and 1018, and generally in Part II. of this book.

1086. If a master ships goods or cargo without the knowledge or consent of the charterer of the ship, and such goods or cargo or part of them be jettisoned or otherwise lost, or suffer damage, the charterer of the ship does not pay great and general average for goods and cargo shipped without his knowledge or consent.

1087. If a master load a ship deeper than the water-line, and to avoid danger and for the safety or lightening of the ship, he is obliged to jettison the goods or cargo, or part of them, this is not considered as average, the master and owner of the ship have to pay the loss in full to those to whom it is due.

1088. If goods or cargo properly stowed in the hold be jettisoned to lighten the ship, this is considered as great and general average. Goods or cargo in the cabin or in those places where the seamen live, or *between decks*,* or on the deck, or in other such like places, being thrown overboard, are not considered as [having a claim to] great and general average, but in this case each bears his own loss. Should the master, for better preservation or other reason, take with him into the cabin, money, precious metals or valuable articles, and if to lighten the ship other goods or cargo be thrown overboard instead of them, those articles are included in contributing to great and general average, as well as the others.

1089. If anyone brings on board the ship, goods or cargo, valuable or otherwise, and does not notify it to the master, or take from him an acknowledgment of the receipt, or pay freight for them, and those goods or cargo not notified to the master be jettisoned or otherwise destroyed, this is not deemed great and

* This means presumably between a hurricane or spar-deck, and the main-deck of a ship not between the main and lower-deck, where both are integral portions of the ship's hold. See the Belgian Code, Art. 20, *Law Magazine and Review*, No. CCLI., p. 134.

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general average, and the loss occasioned is borne by the owner of such goods or cargo.

1090. If a ship arrive in port, and during the voyage has encountered storms or heavy weather, and the master, though he used all possible care and caution for the safe preservation of the goods or cargo, has reason to fear that the goods have been damaged; he, before opening the hatchways of the ship, must make a deposition [lit. presentation] concerning it to a public notary in the course of twenty-four hours after arrival in port, and explain the matter in the declaration presented at the Custom House, conformably with the Customs Regulations; then in the course of seven days from the day of arrival in the port he is bound to make a protest, *i.e.*, to notify it under oath before a public notary with two sworn witnesses. The mate, carpenter, and two or more seamen must do likewise, in proof that the loss was not caused by their negligence or carelessness. *See* note to Art. 203 [*ante*].

1091. When a ship during a voyage encounters storms and heavy weather, and the masts are carried away by the storms,* or when to avoid danger, or for the safety of the ship, goods, or cargo, it is necessary to cut away a mast, or to jettison part of the goods, cargo, or other articles to lighten the ship, the master is also bound to fulfil the rules mentioned in the preceding Art. 1090. The mate, carpenter, and two or more seamen are bound to do likewise in proof that the mast was cut away or part of the goods thrown overboard in extreme necessity and for the safety of the ship or remaining goods.

Note.—In order that persons having a share in the cargo may know that masters intend to make, or have made, a protest, notaries and Custom House (officials) are bound to act in conformity with the rule laid down in the Customs Regulations. See note to Art. 203 [*ante*].

The neglect of rules 1090 and 1091 of the Commercial Code by a master, who having suffered average, is bound to make a declaration to the Custom House of the quantity of goods thrown overboard, and the consequent impossibility for the latter to verify the cargo remaining on the ship, deprives the owner of the cargo of the right to claim insurance for the part of the cargo thrown

* See note ‡ to Art. 1076.

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overboard.—(Decision of the St. Petersburg Commercial Court, 5 June, 1881, case of Volokhin.—Practice of the St. Petersburg Commercial Court, 1880-1881.)

1092. If great and general average be sustained by a ship, goods, or cargo, the adjustment of average must be concluded before the goods or cargo carried in the ship are delivered from the Custom House to the owners, for which purpose the master or owner of the ship, goods, or cargo must present a petition to the Custom House. The Custom House is bound in this case to detain the goods or cargo on this petition, until the average be stated, and the calculation of payment determined.

1093. For properly adjusting the calculation of payment of average, it is necessary to value the ship, goods, or cargo, which sustained the average (including the goods or cargo which were jettisoned) at the price for which the ship, goods, or cargo might be sold in the place where it arrived, or to which the goods were carried, excluding from that value the duties, lighterage, expenses of unloading, and carriage into the Custom House. If anyone declare a value less than the actual one, another person may claim the article for the price declared, paying three per cent. more than the declared value, for which, on payment of duties, freight and expenses of unloading and carriage into the Custom House, it is given to him.

1094. If the master and seamen zealously and bravely defended the ship against the enemy or pirates, the expense of their reward is considered as great and general average; Those who participate in the defence receive: if unwounded, six months pay, if wounded, a year's pay, those who have lost a limb, two years' pay, and the heirs of those who are killed or died from wounds, two years' pay. The medical treatment of the wounded is also considered as great and general average or adventure, and is paid by general contribution.

1095. If a ship be so damaged on a voyage that she cannot continue it to the place of destination and the master is compelled to put into another port for repairs, and the repairs cannot be completed at the time the ship should have arrived at the place of destination, and through the delay, loss may be caused to the

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owner of the goods or cargo; the master may hire another ship or vessel (if he can hire at the same price [rate] ); the master pays two-thirds of the hire and the owner of the goods or cargo, one-third; and the master who carries the goods or cargo to the place of destination receives one-half of the cargo money (gratuity), leaving the other half for the benefit of the master who transferred the goods to him. The duties of a master on arrival in port in distress, or in consequence of average losses sustained by the ship, as well as the duties of the Custom House in this case, are described in detail in the Customs Regulations.*

## CHAPTER V.

### *On Average or Maritime Losses arising out of Mutual Damage of Merchant Vessels.*

1096. Average of mutual damage to a ship, goods, or cargo, is loss through another ship, goods, or cargo.

1097. If average of mutual damage be caused to a ship, goods, or cargo, the one which caused it pays for the loss.

1098 (Supt. of 1881).—Rules for the prevention of collision of vessels at sea are appended† to this Art.

1099-1105 (Supt. of 1876), are cancelled.

1106. By day merchant vessels must in all cases keep at a safe distance from a ship of war, squadron, or fleet, and by no means cross the line of order in which the fleet or squadron is. A merchant vessel is wholly responsible for every misfortune that may be caused by collision, if she does not obey the rule prescribed by this article.‡

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* These Regulations being liable to constant change, are not printed here.

† This Appendix consists of the International Regulations for Preventing Collisions, except that, whether by oversight or intention, it presents two points of difference of importance from other versions of those Regulations. (1) In Art. 5 the word "not" is omitted; (2) Art. 11 is omitted altogether.

‡ It has always been considered in some sort disrespectful to cross the bows of a ship of, so to speak, superior rank, and, within living memory, all vessels were, within British waters certainly, obliged to give way to

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1107. In night-time, if a ship of war be sailing alone, both the merchant vessel and the ship of war must observe the general rules prescribed for the meeting of vessels; but if war vessels constitute a squadron or fleet (which may always be recognized by the large number of lights), and consequently are in sailing order, then a merchant vessel meeting them is bound, as by day, to keep at a safe distance from the squadron or fleet. If she does not comply with this rule, a merchant vessel is liable to the same responsibility as laid down in the preceding article, 1106.*

1108. In war time, all merchant vessels, without exception, under whatever conditions, are bound to give way to war vessels, both by day and night.

1109. If two ships under sail,† by unavoidable accident, without any fault, collide together, and in consequence one ship, or both, or the goods loaded on them, sustain damage, shipwreck, or destruction, and the *master*, *mate*, *and two or more seamen* declare upon oath that it was an unavoidable accident, without any fault of theirs, then this is considered as simple and particular average, and each party bears his own loss.

1110. If two ships are sailing on different tacks, and both masters will not give way one to another through obstinacy, and one ship collides with the other and damage be thus caused to one

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British men-of-war, and still in H.M. service, a junior officer in a boat must give way to his senior; but there is no recognition of the practice in existing English law; had there been, the unfortunate accident of the collision between H.M. yacht *Alberta*, and the sailing yacht *Mistletoe* in the Solent some years ago, either would not have occurred, or would have been the fault of the latter vessel.

* This and the preceding Articles designed for the protection of the Russian Navy are well worthy the attention of those who navigate the Baltic and Black Seas; these sentences might well give rise to International complications if relied upon beyond those limits, but Russian fleets or squadrons are not often met with on the high seas.

† This article appears to contemplate that sailing vessels may get out of control, but does not apply to steam vessels. The result is the same as in England in case of inevitable accident, but the method of proof of the fact here laid down would appear somewhat liable to abuse. See also Art. 1119, *post*.

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or both ships, the obstinate master pays his loss. If damage be caused to the goods or cargo loaded on one or on both of the ships, the obstinate master is bound to indemnify the owner of the goods according to his pay and in proportion to the value of his ship, and if his pay be insufficient the owner or owners of the ship are bound to make up the remainder according to the same proportion.*

1111. If one ship, through the want of skill, carelessness or obstinacy of the master or seamen, collide with another ship, and damage or loss be caused to this ship or the goods or cargo on board it, by the collision; the master and seamen causing the collision are bound to make it [*i.e.*, the damage] good according to their pay and in proportion to the value of the ship; the owners of the ship have to make up the remainder on the same proportion. But before this payment, the master and seamen of the ship, to which damage was caused through the collision, are bound to prove their innocence before a Court, and that they used all possible means for the avoidance of the collision. If they used no means, but remained in inaction, then they pay for their loss themselves.

1112. If a ship under sail collide with another ship at anchor or lying-to, under† main-sail or foretop-sail, the master of the ship

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* The translation of this very curious article is here given literally, but the meaning is very obscure; "both masters" can hardly be "obstinate" in keeping their course. (Arts. 14 and 22) of the International Regulations incorporated in this Code (Art. 1098, App.). It may perhaps mean that any master is held to pay personally for a collision caused by his actual default; as to the amount he has to pay it would appear that the whole damage is brought into a lump sum and divided between the two ships in proportion to their value, and that the master who is personally in default is liable for the share of his ship so far as his pay will cover it. But it may well be that it refers to a state of things antecedent to any International Regulations and together with Arts. 1111, 1112, has been rendered practically obsolete by those Regulations.

† The description of the sails is probably surplusage, as they are certainly peculiar sails to lie-to under. The article, then, only puts a vessel not under immediate command in the same position in respect of collision as a vessel at anchor, and is not inconsistent with Art. 4 (*d*) of the International Regulations, but is not in accordance with the view the English Court of Admiralty has taken of it. (*The Rosalie*, 5 P.D. 245.)

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which collided, and his owner, pay for the loss caused to both ships as well as to the goods laden in them.

1113. If a ship in a storm or for its safety be compelled to put into a haven, and before it can be brought up falls foul of another ship lying in the haven and causes damage to it, the owner or owners of the ship which causes damage to the other, in addition to their own loss, must pay for one-half of the damage to the other ship or the goods laden in it.*

1114. If a ship is lying in a roadstead, and in bad weather drags her anchor and commences to drift and falls foul of another ship, she is bound, in addition to her own damage, to pay for one-half of the loss caused to the other ship. If the yards and top-mast of the ship which caused the collision were not struck, or not cable enough veered, or another anchor not let go, or two anchors laid out [lit. placed], or if the anchors were not of sufficient weight for the size of the ship, or the cables not of sufficient thickness and strength; then the owner or owners of the ship which caused the collision, pay all the loss [damage] caused by the collision to the other ship and the goods loaded on it.†

1115. If a ship is lying in a roadstead at anchor, without anchor buoys, and another ship entering the roadstead lets go her anchor across the cable of that ship, and thus parts her cable or sustains other damage or loss; the ship without buoys on its anchor must pay the other ship for the cable which parted and for the other loss sustained in consequence. If the master be not in a condition to pay for all, the owner or owners of the ship are bound to pay. But when the master of the ship can show that he had a buoy on his anchors, but that the buoy was detached by the other ship or other accident, and that he had no opportunity to weigh his anchor and make fast another buoy, each ship pays its own loss. As soon as the wind permits, the master who lost the buoy from the anchor must raise his anchor and give place to the incoming ship.

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* This Regulation is adopted from the Dutch Law (See Dutch Code of Commerce, Art. 540), but that is general in its application and not confined to the case of a vessel in distress making a port of refuge.

† Compare Commercial Code of Holland, Art. 540.

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1116. If a ship, entering a roadstead and letting go its anchor, fouls the anchor or cable of another ship on which there is a buoy, the master who fouls the anchor or cable of the other ship pays for the damage caused to that ship; if he be not in condition to pay, the owner or owners must pay the remainder.

1117. If, in consequence of rapid currents or high seas running in a roadstead, a buoy be drawn under water, a ship entering the roadstead must ascertain the position of the buoy. A ship lying at anchor in the roadstead at such a time must inform the newcomer where its anchor is in order that he may not foul its cables with his anchors.

1118. If a ship by an unavoidable accident loses its best anchor, and through distress be compelled to put into a roadstead where other ships are lying at anchor; for the safety or bringing up of that ship and the goods loaded on it, the master may let go a small anchor (kedge) across the cable of a ship at anchor; and the ship which lies at anchor must render the one saving itself all possible assistance. The master or seamen saving a sinking ship have a right to receive a recompense of 3 per cent. on the value of the ship saved.

1119. When two ships are under sail, and in time of dense fog, heavy rain, or darkness, cannot see one another until there is no possibility of avoiding each other; also when, in a heavy sea, or a current, or light and variable winds, a ship does not obey her helm, and in other similar circumstances, at night and by unavoidable accident they fall foul of each other, and damage is caused to one ship or to both, each pays for his own damage.*

1120. If two ships are under sail, and there is not a thick fog or heavy rain, and each ship can see the other, and there is a possibility of avoiding each other; when the sea or current is not violent and the winds moderate, and the ship obeys the helm, and though at night it is clear enough, and a collision occurs, and it appears that neither of the ships showed a light, hailed with the speaking trumpet, rang a bell, fired a gun, or made any other

* This Article repeats Art. 1109, and gives special instances of its applicability.

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alarm, and damage be caused to one ship or to both through the collision, each pays for his own [damage]. If on one of those ships all possible means were used to avoid the collision, and the other ship neglected them, the master who did not use the means at his disposal to avoid a collision, and his owner or owners, pay for the damage caused by the collision to both ships and to the goods loaded on them.*

1121. But when both ships use all possible means to avoid a collision, and nevertheless it occurs, the damage or loss caused is paid for by mutual assessment in proportion to the value of the ships. The owners of goods or cargo, however, do not *participate* in this average; and for loss caused to goods or cargo through the obstinacy of a master, he and his owner pay, as laid down in Art. 1110; if he is not the cause of it, then each (cargo-owner) pays his own loss.†

1122. In case of collision it is necessary to find out:—(1) From what quarter the wind was at the time; (2) to what point of the compass the ship was heading before it collided with the other ship; (3) what part of one ship struck what part of the other ship, and what sails were set on both ships at the time; (4) what means each master or navigator used to avoid the collision; (5) how the sails were trimmed; (6) the position of the helm, &c.

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* This Article, in accordance with the laws of most civilised nations, and with the Common Law of England prior to 1875, makes contributory negligence a defence in an action for damage by collision; or, in other words, where "both ships are to blame each bears its own loss."—See an article in *Nautical Magazine* for 1881, "Conflict of Law in cases of Collision at Sea."

† This Article appears to contradict Arts. 1109, 1119, as the case described in the first part of it is clearly one of inevitable accident, indeed more distinctly so than those mentioned in Art. 1119. Perhaps the compiler of the Code wished to draw a distinction between collisions caused by *force majeure* and those caused by two masters each adopting what he considered the best means, but which from ignorance of those adopted by the other master were not so in fact. If the intention of the Article is to meet the latter case it should now be obsolete, as the International Regulations define what each master ought to do.



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If both ships were braced sharp up on different tacks it is necessary to ascertain:—(*a*) Whether there was on either of the ships a mizzen let go, or brailed up; (*b*) whether a jib was hoisted or let go on either of the ships before they collided; and if either of the ships had brailed up the mizzen, and hoisted a jib or fore-topmast stay-sail; this serves as a true indication that that ship intended to bear away, and then the other ship should have kept her luff. In this case that ship is reckoned most to blame which struck the other with her weather side and bows, and that ship which received the stroke and damages on the lee side the less guilty.*

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## THE PRIME MERIDIAN CONFERENCE.

OUR readers have in previous numbers of the *Nautical Magazine*, been apprized of the fact that at an early date a Conference of the Maritime Powers would be held for the purpose of settling upon a *fixed prime meridian*, from which longitude should be invariably reckoned. The Conference met at Washington in the early part of October; and the discussion chiefly arose upon whether the meridian of Greenwich should be adopted as the initial point of departure or a neutral meridian should be taken as a standard.

The following is a brief summary (taken from the *Times*) of the session, sitting on the 13th October, when a resolution recommending the choice of *Greenwich as the universal prime meridian* was adopted;—the *ayes* being 21, and there being but one *nay*—San Domingo. France and Brazil abstained from voting.

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* The earlier part of this Article is a fair guide to a lay judge on questions of elementary seamanship, and may be compared to the information given by "Preliminary Acts" in this country. The final clause is obsolete, as the International Regulations define which ship should keep out of the way, it appears to contemplate that when vessels are meeting on different tacks the vessel most to leeward ought to give way.

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"After certain routine business had been got through, Mr. Fleming (Canada) argued against adopting a neutral meridian, as proposed by France. Dr. Cruls (Brazil) supported the French proposal, which was, however, defeated, the ayes being three in number—France, Brazil, and San Domingo.

"To the American resolution for adopting the Greenwich line, Mr. Fleming (Canada) moved an amendment to the effect that the Conference should adopt the 180th degree of longitude east from Greenwich as the prime meridian; but the other British delegates opposing the proposition it was lost.

"Señor Valera, the Spanish Minister, said that he had been instructed by his Government, in voting for the meridian of Greenwich, to say that it hoped the metric system of weights and measures would be adopted by England, the United States, and the other nationalities there represented, as recommended by the Conference at Rome.

"General Strachey (Great Britain) said that he was authorised to state that his country had asked to be allowed to join the Metrical Convention, and that the metric system was already recognised by the laws of Great Britain, and was in use for scientific purposes. He could not, however, say that it would be adopted in any circumstances as a popular system of weights and measures throughout England.

"Mr. Allen (United States) then argued for the adoption of the Greenwich meridian, and presented a resolution, passed by the Philadelphia Railway-time Convention, protesting against any changing of the locality from Greenwich.

"M. Lefaivre (France) said the Greenwich was not a scientific meridian, and that it implied no progress in any science, but was merely a commercial standard. Since, therefore, nothing would be gained to science by adopting Greenwich, France could not make a sacrifice of her own meridian, and incur the vast expense consequent upon the adoption of a new one, because she would thereby gain no advantage whatever.

"Sir William Thomson, who was present as a guest, by the invitation of the Conference, spoke in favour of the choice of Greenwich. He said that it was purely a matter of convenience,



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and that Greenwich answered the world's convenience better than any other standard meridian.

"An effort was here made to discuss the metric system of weights and measures, but the President said it was not a proper subject for the present discussion.

"Sir Frederick Evans (Great Britain) presented a statement, showing that the shipping tonnage controlled by the Greenwich standard of longitude was about 14,000,000 tons, and that controlled by the Paris one only 1,735,000 tons.

"Greenwich was then adopted.

"Mr. Rutherford (United States) moved that from the Greenwich meridian the longitude be counted in two directions, up to 180 degrees, the East longitude being *plus*, and the West *minus*. The Russian Minister advocated this proposal, but Count Lowenhaupt (Sweden) moved the adoption of the fourth resolution of the Roman Conference for counting longitude continuously through the whole 360 degrees. Herr von Alvensleben (Germany) said that this was a matter of detail, and therefore he should not vote upon it. The British delegates agreed with the German Minister that this was a matter of detail, and held that it would not make any difference which method was adopted. Señor Juan Pastorian (Spain) stated that he favoured the plan of counting longitude westward continuously round the world."

It was further proposed to adopt a universal day for any purpose for which it might be found convenient, which, however, should not interfere with the use of local, or other standard time.

The discussion on this point was then adjourned, and at a subsequent sitting the Conference adopted a resolution declaring the universal day to be the mean solar day, beginning, for all the world, at the moment of mean midnight of the initial meridian, coinciding with the beginning of the civil day, and to be counted from zero up to 24 hours.

The resolution further declares that the Conference expresses the hope that, as soon as practicable, astronomical and nautical days may be arranged everywhere to begin at mean midnight.

Professor Janssen, of France, moved that the Conference should

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express the hope that technical studies to regulate and extend the application of the decimal system to the divisions of the circle and of time would be resumed, in order to permit of the extending of that application to all cases where it might present real advantages. The motion was adopted, and the Conference again adjourned.

In our next number we shall consider at length the various questions raised at this Conference.

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## SHIPBUILDING, 1884.

### Iron and Steel Steamers Built in the United Kingdom and Registered as British Ships.

| Ports where built. | No. first six months. | Gross tonnage first six months. | No. third quarter. | Gross Tonnage third quarter. |
|---|---|---|---|---|
| Clyde Ports ... | 65 | 87,837 | 29 | 28,038 |
| Tyne Ports ... | 55 | 74,573 | 27 | 26,287 |
| Sunderland ... | 50 | 77,174 | 14 | 24,049 |
| The Hartlepools | 16 | 23,883 | 4 | 6,164 |
| Middlesbro' ... | 10 | 16,772 | 1 | 336 |
| Stockton ... | 9 | 9,879 | 1 | 195 |
| Whitby ... | 4 | 6,125 | — | — |
| Hull ... ... | 16 | 11,534 | 2 | 3,742 |
| London ... ... | 7 | 842 | 4 | 270 |
| Southampton ... | 3 | 3,864 | 1 | 104 |
| Liverpool ... | 4 | 3,535 | 6 | 4,351 |
| Barrow ... ... | 9 | 14,280 | 1 | 1,341 |
| Belfast ... ... | 8 | 8,877 | 5 | 11,331 |
| Cumberland Ports | 2 | 1,780 | — | — |
| Aberdeen ... | 4 | 3,282 | 2 | 3,114 |
| Dundee ... ... | 5 | 6,318 | 7 | 7,456 |
| Grangemouth ... | 2 | 1,359 | 1 | 205 |
| Kirkaldy ... ... | — | — | 1 | 1,055 |
| Leith ... ... | 6 | 12,103 | 2 | 849 |
| Other Ports ... | 31 | 12,138 | 11 | 3,387 |
| Total ... | 306 | 376,155 | 119 | 117,274 |

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Besides these vessels, six new iron steamers built on the Continent were registered as British ships in the third quarter of 1884 as follows :—

| Ports where built. | No. third quarter. | Gross Tonnage third quarter. |
|---|---|---|
| Rotterdam ... | 3 ... | 1,635 |
| Delftshaven ... | 1 ... | 214 |
| Flushing ... | 2 ... | 1,375 |
| Total ... | 6 | 3,224 |

IRON AND STEEL SAILING SHIPS BUILT IN THE UNITED KINGDOM, AND REGISTERED AS BRITISH SHIPS.

| Ports where built. | No. first six months. | Gross Tonnage first six months. | No. third quarter. | Gross Tonnage third quarter. |
|---|---|---|---|---|
| Clyde Ports ... | 17 ... | 31,183 ... | 8 ... | 15,135 |
| Belfast ... ... | 4 ... | 4,895 ... | — ... | — |
| Southampton ... | 4 ... | 9,497 ... | 1 ... | 2,521 |
| Stockton ... | 3 ... | 5,623 ... | — ... | — |
| Liverpool ... | 7 ... | 15,259 ... | 2 ... | 3,472 |
| Sunderland ... | 1 ... | 1,243 ... | 3 ... | 2,778 |
| Cumberland Ports | 1 ... | 1,849 ... | — ... | — |
| Leith ... ... | 1 ... | 1,040 ... | — ... | — |
| Bristol ... ... | 1 ... | 974 ... | — ... | — |
| Tyne Ports ... | 1 ... | 1,364 ... | 1 ... | 1,364 |
| Whitby ... ... | 1 ... | 1,867 ... | — ... | — |
| Dundee ... ... | — ... | — ... | 1 ... | 1,765 |
| Other Ports ... | 8 ... | 547 ... | 3 ... | 215 |
| Total ... | 49 ... | 75,341 ... | 19 ... | 27,250 |

In the third quarter, of the vessels enumerated one only was a steel sailing ship of 906 tons, built on the Clyde; during the first six months, one at Belfast, one at Workington, and one at Glasgow, were of steel.

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STEEL STEAMERS BUILT IN THE UNITED KINGDOM, AND REGISTERED AS BRITISH SHIPS.

| Ports where built. | No. first six months. | Gross Tonnage first six months. | No. third quarter. | Gross Tonnage third quarter. |
|---|---|---|---|---|
| Clyde Ports ... | 20 | 43,994 | 14 | 16,879 |
| Liverpool ... | 1 | 662 | — | — |
| Dundee ... | 2 | 3,889 | 3 | 4,652 |
| Sunderland ... | 1 | 1,774 | — | — |
| Cumberland Ports | 1 | 267 | — | — |
| Hull ... | 3 | 2,908 | — | — |
| Barrow ... | 1 | 1,191 | — | — |
| Grangemouth ... | 1 | 1,161 | — | — |
| London ... | 3 | 355 | 1 | 124 |
| Kirkaldy ... | 2 | 2,284 | 1 | 1,055 |
| Tyne Ports ... | 1 | 1,450 | 1 | 713 |
| Aberdeen ... | 1 | 1,062 | — | — |
| Poole ... | 1 | 27 | — | — |
| Llanelly ... | — | — | 1 | 300 |
| Belfast ... | — | — | 1 | 2,216 |
| Total ... | 38 | 61,024 | 22 | 25,939 |

## NEW TRADE ROUTE TO SIBERIA.

THE steamer *Nordenskiöld*, bound for the Yenesei, put back to Drontheim, July 25, with machinery damaged; after repairing she proceeded on August 14 again for the Yenesei, with Mr. Sibiriakoff on board. On August 20 she fell in with the steamer *Ob*, off Kolgujef Island, which latter vessel had, in the meanwhile, made a voyage up the Petchora River to the town of Kuja, about 100 versts (66 miles) from the river's mouth; the *Ob* discharged her cargo, principally sugar and tobacco, at Kuja and loaded Siberian produce. The *Nordenskiöld*, on her arrival at Kolgujef, found masses of ice filling

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up the fairway between the island and the mainland. Efforts to get through the Jugor Straits into the Kara Sea, proving unsuccessful, the *Nordenskiöld* had to put back to Varandei, about midway between Jugor and Petchora, where part of her cargo was transhipped into the *Ob*, which deposited the goods at Kuja, in order to be taken further up afterwards. The Siberian produce brought from Kuja by the *Ob*, consisting of about 1,800 poods wheat, flax, hides, bristles, carpets, tea, &c., was transferred to the *Nordenskiöld*. These goods were last winter brought from Tobolsk to Oranets on the Petchora River, 700 versts (467 miles) from its mouth, and were this year brought down to Kuja in craft. M. Sibiriakoff has now concluded an arrangement for forwarding 10,000 poods of various Siberian produce, which is to be conveyed in craft, in the autumn, on the Obi River, towed by steamer to Beresov, and forwarded thence by steamer on the Sigva and Vosva Rivers to Ljapinsky Purto; thence, during the winter, the goods will be brought on by horses and reindeer. The journey is expected to occupy a month. Next year the goods will be brought in craft to Kuja, there taken on board by the steamer *Ob*, and either brought by her to Archangel, or transshipped into the *Nordenskiöld* for Europe, should the latter vessel again fail to reach the Yenesei. The distance from Ljapinsky to Oranets is about 170 versts (114 miles), through a wooded country with good grass roads. The Ural chain is not very high in that part, and horse sledges are procurable from Oranets. The cost of transport from Ljapinsky to Oranets is estimated at 12 kopecks (or nearly 4d.) per pood of 40 lbs. A practicable land transport route seems thus to have been found, which acquires considerable importance in connection with the canal already commenced for connecting the rivers Obi and Yenesei. There is a bar at the mouth of the Petchora with 12 ft. water. The *Ob* is expected to winter either in Petchora or here. The *Nordenskiöld* arrived back here a fortnight ago and will winter here.

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## EXPLORING HUDSON'S BAY.

MUCH interest is manifested, both in Canada and the United States, in the enterprise of Lieutenant W. R. Gordon, who was selected by the Canadian Meteorological Service for the expedition to Hudson's Bay, to establish stations for scientific observations. The work has already begun, and at each of the seven stations selected, the usual meteorological observations will be made. Heavy tides will be measured; the drift of water will be noticed, and the conditions and state of the ice. Cape Hope is the most important station, and here a temporary magnetical station has been opened. This first expedition has been provided for by votes of 70,000 dollars by the Dominion Government for the purpose of obtaining reliable information as to the navigation of the Strait to the Bay, and to decide upon the feasibility of the adoption of the route as a summer outlet for the produce of the North-West. Each station party consists of two men and an Esquimaux interpreter, besides the officer in charge, and sufficient provisions and fuel for fifteen months are supplied. Manitoba has long been anxious to secure communication by rail or water with British and foreign markets, by way of Hudson's Bay. The Manitoba members, in obedience to strong popular feeling, pressed the question upon the attention of the Canadian House of Commons, and a Select Committee of the House was appointed to inquire into the question of the navigation of Hudson's Bay and Strait. The evidence taken furnishes proof of about three and a-half months' navigation, but nothing to prove that navigation will not show the waters to be open much longer. The evidence also went to show that the resources of the Strait and Bay and the surrounding country, in fish, furs, and minerals, are of great value, being for the most part yet wholly undeveloped. The Committee in their report to the House, expressed faith in the proposed route, and recommended the equipment of an expedition. The report was unanimously adopted, and the House voted 100,000 dols. to be

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used this year for the purpose. It is expected that the vote will be repeated annually for three years, in order to inquire into the possibilities of navigation as fully as possible, and to complete a survey of the Bay and Strait together with the most important harbours and rivers. Lieutenant Gordon, the head of the present expedition in the *Neptune*, has been for ten years in the British Navy, and five years in that of Canada. He is accompanied by Dr. Robert Bell, geologist; Charles R. Tuttle, of Winnipeg, historiographer, and seven officers. The seven stations are to be established in the following places, six on the Strait and one on the west shore of Hudson's Bay:—The first at Cape Chadley, the second on Resolution Island, the third at Cape Horn, the fourth on the north bluff of the mainland or on one of the Upper Savage Islands, the fifth on the south-east end of Nottingham Island, the sixth on the south side of Mansfield Island, and the seventh at Fort Churchill, on the mouth of the Churchill River.

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## OIL ON TROUBLED WATERS.

THE following report on the subject of "Oil on troubled waters" has been presented to the governing body of the Royal National Lifeboat Institution by their Chief Inspector of Lifeboats, Captain H. W. Chetwynd, R.N.:—

"Royal National Lifeboat Institution,
"14, John Street, Adelphi, London,
"Sept. 30, 1884.

"DEAR SIR,—I have the honour to report to the Committee the result of the experiments to test the use of 'oil in calming troubled waters,' ordered by them to be made by the district inspectors in the lifeboats of the institution, and which have been carried out as opportunity offered.

"The consideration of the paramount importance to this institution of the efficiency of any proposed agent for calming troubled waters, and consequently lessening the loss of life from shipwreck,

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has induced me to include the whole subject in my report, and not to confine it to the use of oil in lifeboats alone. For convenience, I have divided the subject into five heads, viz. :—

"1. The use of oil in the lifeboats of the institution.

"2. Its use as a protection to ordinary open boats in heavy surf or breakers.

"3. Its use to ships in heavy weather, in the open sea, when found desirable to reduce the force of the waves.

"4. Its use in open boats under similar circumstances.

"5. Its use on bars and at the entrance of harbours for vessels entering in bad weather.

"The result of the experiments made have been to show that there is little difference in the effect produced by the various oils of ordinary every-day use, such as colza, linseed, fish, or seal oil, &c. In some cases paraffin was used with the same effect.

"Very small quantities of oil were found sufficient to cover a considerable space with the smooth, glassy surface characteristic of oil on water.

"The effect of this smooth surface or oily film on moderate breakers, or surf that would endanger the safety of small open boats, was most marked. It entirely stopped their breaking, leaving only the undulations or roll of a harmless swell, and thereby robbed them of their danger ; but in surf of sufficient magnitude to be of importance to a lifeboat, or such as are ordinarily encountered by them, this effect was very much modified and frequently entirely absent.

"On more than one occasion, in a moderate surf, which the oil was entirely 'killing,' if a larger breaker than the surrounding one rose, the oil was powerless to check it and the sea broke through it, covering boat, gear, &c., with oil.

"Its want of power to overcome the dangerous part of a heavy surf in shoal water (viz., the break) was clearly shown on more than one occasion, even when the oily film could be distinctly seen on the surface between the breakers. It seemed to fail in a very marked and curious way to have an effect on breakers caused by a heavy ground swell and not by wind on the coast of Cornwall. At

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one place a considerable quantity was used with very good opportunity of watching its effect, but it had none on the heavy and dangerous outer breakers. At another place the bags were efficiently tried, with equal opportunities of observation, and the same result.

"To be any protection it must be applied to the sea from the boat or vessel in the direct line from which the seas are advancing and at a sufficient distance to give it time to spread and act upon the waves before they reach the vessel to be protected. This could only be done in a lifeboat in two positions—viz. (1) when anchored and lying head to sea and tide, and (2) when running dead before the sea for the shore.

"In any other position, even supposing the oil to be calming the sea, it would most probably be impossible to keep the boat within its influence and proceed towards a wreck or other desired point at the same time. This difficulty would be considerably enhanced by the fact of the tide or current on the greater part of the coast setting with more or less velocity along shore.

"Under these circumstances, I am of opinion that no practical advantage can arise from the use of oil in the boats of this institution, and I cannot, therefore, recommend its being supplied to them.

"With respect to its use as a protection to ordinary open boats in (to them) dangerous surf or breakers, the experiments appear to demonstrate clearly that, although it cannot be considered a 'specific,' certain to insure immunity from danger in all cases, yet that in many cases it would prove a very material protection and go far to insure the boat's passing safely through what would otherwise prove very dangerous and possibly fatal seas, and on that account alone its adoption cannot be too strongly urged for boats having or likely to have to encounter these dangers.

"It must be obvious that the experiments carried out by the institution's boats can throw no light upon the third and fourth divisions of the subject, therefore the only reliable sources from which to obtain information have been the reports of those who have tried its effect at sea, and of which it has been practicable to obtain sufficient, either verbal, written, or from the Press, to show

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that its effect is most marked and beneficial, at the same time being more certain and apparently less capricious than in surf or breakers.

"The reports of its use in the open sea comprise, when running before a heavy sea, when hove-to in a gale of wind, and when lowering boats in a heavy sea.

"In every case its effect has been so remarkable it seems incredible that its use is not general and an every day occurrence, more particularly in small vessels where it could not but add to their comfort as well as safety.

"As a protection to an open boat in a heavy sea, if the accounts received are reliable, of which I think there can be no doubt, it appears to me the means of applying it (which will be referred to below) should be as much part of the equipment of every ship's boat as oars, or a rudder.

"Although this part of the question does not come directly within the province of this institution, I beg to submit for consideration whether or no some means could not be devised for insuring exhaustive experiments being made at sea, and the result published.

"The fifth head—viz., its application to the entrance of harbours, is one that has received very considerable attention, and credit is due to Messrs. Shields and Gordon for their energy and enterprise, as well as the thought, time, and money they must have expended in endeavouring to establish its use, besides the consideration that in so doing they have brought the subject into prominent notice.

"The published reports of the result of their labours so far are very favourable, although they differ to some extent from those of the experiments made by lifeboats. At the same time there are so many practical difficulties in the way of its application and general use, which I believe can only be solved, if at all, by further extensive, and very expensive experiments, finishing with the question that would present itself, even supposing all other difficulties to be satisfactorily overcome, viz., would the harbour authorities be in the position, or willing, to incur the constant and considerable expense of working the apparatus, or would they not prefer the alternative, which cannot be lost sight of, of allowing the

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vessel entering before a heavy sea to pour out the oil herself. This has been done with reported satisfactory results in more than one case.

"Various ingenious contrivances have been invented for applying the oil to the water, but I believe far the simplest and readiest, at the same time most effective appliance, is a canvas bag either rather loosely sewn together or pierced with small holes to allow the oil to escape. This has been the method adopted in the most successful cases reported from ships at sea, and has been found effectual in some of the lifeboats. It has the great advantage of being self-acting, insuring a regular stream of oil, and being easily renewed when exhausted.

"In a vessel or boat running before a sea, I should recommend one being hung over each bow, which gives the oil time to spread before reaching far astern. In a ship when hove-to one or more bags have sometimes been hung over the weather side, and sometimes been put overboard to windward attached to light lines. This I consider by far the best plan, because, not drifting so fast as the ship, the bag will be carried to windward, and fulfil the condition previously laid down of applying the oil to the water at some distance from the ship, in the direction from which the waves are advancing.

"An open boat unable to run before the sea will always endeavour to put out some form of sea anchor with a rope attached and lay to it; the bag of oil should be attached to this, and, failing anything else a boat's mast or a sail loosed is very effective.

"When the boat is anchored, the bag could be attached by a light line to the anchor as a buoy. This appliance, in addition to being efficient, has the great merits of handiness and simplicity. Two such bags holding about a gallon of oil each, with the line attached, might be kept full and packed in a small cylinder, similar to a paint pot or a preserved meat tin, and would form neither an expensive nor cumbersome article of equipment in a boat.

"In the absence of these or similar contrivances the oil could be poured from a bottle or can, but this would require a man's attention when one could possibly be ill spared, and might not

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insure so constant or regular a supply, which I believe to be of importance and it would be inapplicable to a boat at anchor.

"I am, &c.,

"HENRY W. CHETWYND, Captain, R.N.,
"Chief Inspector of Lifeboats.

"Charles Dibdin, Esq., Secretary Royal National
"Lifeboat Institution."

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## CORRESPONDENCE.

### FOREIGN *V.* ENGLISH SAILORS.

*To the Editor of the "Nautical Magazine."*

SIR,—Whilst reading your issue for the month of May, I came across an article by one "Cosmopolite," who, I must say, must be possessed of a deal of courage, or conceited self-esteem, to have had the audacity of making such assertions public in an English sailor's magazine.

Before I say any more I may as well let you know that I am neither the commander of a steamer nor of a sailing ship, but am only an officer of a dozen years' experience at sea, and that I am at present thousands of miles from England, where I have not been for years. But the sentiments of burning indignation that I felt on reading the damnatory unfounded assertions of "Cosmopolite" about the character and abilities of the *English sailor*, caused me to write this answer. And, on those grounds, I hope you will excuse the presumption of a man of my experience attempting to refute them.

If you think my answer worthy of a place in your valuable magazine, I shall be proud and glad to know that "Cosmopolite" will see, and he will also know, that I am only one of many who are proud of their profession, and especially of being *English sailors*.

"Cosmopolite" founds his article on a quotation from Clark Russell's book of fiction, "Round the Galley Fire," which he takes

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upon himself to deny emphatically, and also asserts that an "English sailor" is not equal to a foreign sailor.

Now I mean to say, that "Cosmopolite" does not know what an "English sailor" is, and I should very much like to know on what individual experience of his he founds his assertion. He also says that only 2 per cent. of the Englishmen in English ships are sailors. All that can be said, in answer to that, is, that it is ridiculous, and only makes his ignorance more palpable.

With regard to the prejudice that he says exists among shipmasters against their own countrymen, it is, I am sorry to admit, to a certain extent, true; but it is entirely in favour of Dutchmen (which term, in sailors' language, does not include all foreigners, but only includes Germans, Scandinavians, Danes, Dutch and Russians of the North; all the rest, with the exception of Frenchmen, are termed Dagoes). The reason of this preference is plainly to be seen. The Dutchman is brought up under a stricter discipline than our merchant sailors. On going to sea as a boy, he is given a book, and every voyage that he makes, his character and abilities are entered in that same book, and on leaving one vessel he has to present this book, containing his character and abilities for the whole of his time at sea, to the shipping officer, before he can join another ship. A Dutchman who is not a sailor, although he may possess himself of a sailor's book, dare not ship as such, because he knows for certain that he will be found out and punished, as a man must be a sailor to have a sailor's discharge. (In this book there is also a full list of the rules and regulations he has to conform to, as well as the severe penalties he incurs by not doing so.)

In English ships this is not strictly carried out, and the reason that all Englishmen, who go to sea, are not sailors, is a great deal owing to the general laxity of shipmasters. I can state myself as a positive fact, that I left Liverpool bound for Calcutta, in a large ship, with a crew of 32 hands all told, and amongst the A.B.'s there were four men who had never served as A.B. or O.S. before. None of the four knew how to steer, in fact one of them, on being told by the mate to take the wheel, began to search in the forecastle for it. When picking watches, the man whom the mate thought

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the most likely looking, and whom he picked out first, said afterwards that he had been a soldier for 14 years, and his only sea experience was as cook on board of a vessel from Quebec to Liverpool; of course the mate had not any chance of telling what the man was before, as this was his first appearance on deck, having come aboard drunk. When we arrived in Calcutta, these men, on the payment of one month's pay and 2s. 3d. for every rupee, were paid off, and received good A.B. discharges. How are these things done? Is it then any wonder that we get men in our ships who are not sailors? One of those men told me that the captain, on being informed by him that he was no sailor, asked him if he was able to pull on a rope, and on being answered in the affirmative, said that he would do. Our mercantile navy being so large, we have naturally, a great many of this class of men, and as the shipmaster discovers them on the outward voyage, he will try to get rid of them in the foreign ports, and if any of the sailors are bad characters and drunkards he will get rid of them as well. These men generally make for steamers, and I cannot but think that "Cosmopolite" has found his experience amongst this class of men who, I suppose, call themselves English sailors. That is my reason for emphatically saying he does not know what an English sailor is; if he did he would never have written in the way he has done, or made such a great mistake.

Some shipmasters on going to choose a crew, sooner than have trouble, by shipping Englishmen who may not be sailors, although they have discharges, prefer to take Dutchmen, who they are positive, know their duty, and who are more easily managed than Englishmen, and will put up with bad food, extra work, such as afternoon watches on deck, &c., and occasional bad language, without making any trouble.

A Dutchman, before he will set sail in an English ship, must be confident that he knows his duties well, as it stands to reason that a man is not going to engage amongst strangers on board of a foreign nation's ship without being competent to do what he engages for, and the Dutch sailor must have gone to sea for some considerable time before he gains a little knowledge of the English language, and, in the majority of cases, he is afraid to go back to his own



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country's ships on account of the conscription, and therefore that fear is another inducement for him to behave himself where he is. Again, German ships carry no apprentices, and everyone has to work his way up to captain from before the mast; consequently, I believe that through this they get a better class of sailors than we do, that is to say, men before the mast. To compare men like these with the Englishmen that, I believe, "Cosmopolite's" experience has been amongst, is not to be thought of. You may as well compare a trained soldier with a raw recruit.

I am certain that "Cosmopolite" must have very little knowledge of our seafaring population on the coasts of the British Isles, or of the sailors on our colonial coasts, or even of those who sail in our deep-water ships, to speak in the way he has of them. My experience of the English sailor is this: that when proper discipline is kept on board of a ship, that Jack is just as quiet and obedient, and attentive to his work, as any Dutchman. I must say, however, that it is a very difficult thing sometimes to keep discipline amongst English sailors, but it entirely rests with the captain and officers themselves. If the captain will not recognize his officer's position, and treat him with proper respect, how can it be expected that the men will do so; and I am afraid that this is often the case in our English ships.

With regard to "Cosmopolite's" 20 years experience with crews of Lascars, Malays, Manillamen, Italians, Chilians, and Peruvians, and that he prefers them to English sailors, I can only say that he cannot be a sailor himself to say so. He does not mention that he has had any experience with full crews of English or Dutch sailors. If he has been on the Indian coasting trade, I have no doubt that he finds the Lascars, Malays, etc., better men for working down in a hold, in that climate, than Englishmen. In fact, English sailors would not stop in those steamers except as quartermasters. If he has been on the West Coast of South America, I have no doubt he will find the native Chilians or Peruvians will work with more willingness, at humping sacks, etc., than our English sailors; I don't think that humping sacks, etc., constitute any part of a sailor's duties.

How he can compare these men with our English sailors passes my comprehension. I have met Italians and Manillamen in English

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ships who have been very smart sailors; but then they are only exceptions, as it is only the best of them that venture on board of an English sailing ship. But to compare our sailors with labourers on the Indian and South American coasts, at their regular employment, is ridiculous in the extreme. We do not call our stevedores at home sailors. As to steering qualities, some sailors steer better than others, and it is not always the case by any means that the best helmsman is the best sailor. If I find that a man cannot steer, or will not pay attention to his steering, I send him from the wheel, and punish him if possible. I do not think that "nagging" at a man will make him steer any better.

The average of English sailors who can heave the lead properly, I have not the faintest idea of. "Cosmopolite" reckons it as one in ten; on what he bases his calculation, I do not know. I do know that English merchant sailors get very little experience of the hand lead, and my experience in steamers has been this, that nearly all sailors, with very few exceptions, that join steamers, and who have not been in steamers before, are entirely ignorant of the hand lead, and that the English sailor will generally learn it quicker than his foreign brother, and it is only reasonable to suppose so. As to its being proverbial, that the better you treat an English sailor the worse he behaves, I would like to know the meaning of "Cosmopolite's" *better*. If he means give him extra food to what he is usually allowed, and less than his usual quantity of work, and to allow him to have his own way generally, I should not be at all surprised if Jack proved turbulent, as I do not mean to say that English sailors are angels. I should say they lean more to the other side, and consequently require to be firmly controlled. If "Cosmopolite" has been used to dealing with Lascar crews, it is no wonder that Jack and he does not agree.

I should also like to know has "Cosmopolite" witnessed many cases of emergency during his career on board of ships manned by English crews, and, if so, can he name any particular occurrence when the English sailors disobeyed orders, and rushed for the boats, unless it was to save the lives of others.

Again I must trespass on the generosity of "Cosmopolite" by asking him in what trade he has been engaged in that he has noticed



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such a steady deterioration in the character of the English sailor for the last 15 years. His field of experience must indeed have been a wide one for him to make such an assertion as this. I, on the contrary, have found him constantly improving. But my experience does not permit me to say much on this point.

Compulsory certificates are all very well, but they would soon become as common as good discharges, and just of as much use if shipmasters will not bring the law into force on men who ship under false pretences. As to paying an insubordinate, incompetent and lazy rascal the same wages as an able seaman; if a shipmaster does so, I believe it is a dereliction of duty on his part, as the law gives him power to disrate the man if he is not competent to perform his duties, and to fine him if he is unruly.

Before anyone gives up the ancient belief in the virtues of the British sailor, they must have more convincing proofs than "Cosmopolite's" unsupported and indefinite statements. Anyone, to read his accusatory statements, would think that he must have had very extensive dealings with them; I notice he does not say so.

I must say in conclusion that although "Cosmopolite" feels deeply on the subject, I can assure him that he has made others feel deeply hurt, that an Englishman, for he can be no other, would write in such terms of English sailors. Instead of feeling degraded, however, I feel honoured and proud that I can subscribe myself as Your very obedient servant,

AN ENGLISH SAILOR.

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*To the Editor of the "Nautical Magazine."*

Sir,—In spite of the several contradictory answers to "Cosmopolite," who replies in your issue of this month, I think that, to a great extent, he is right, and that anyone who has had varied experience in the merchant service will confess to the truth of his remarks. Men who have been all their lives in high class lines are hardly in a position to give an opinion on the matter, as they only see the best of the men as a rule.

I have seen service in all kinds of vessels of all classes, both sail and steam, and I must say that, in my opinion, the *ordinary run* of English seamen are, as seamen, worse than they were twenty

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years ago. They may, as a class, have improved slightly in moral character, but, as seamen, they have retrograded, and the moral improvement is not large enough to counterbalance the retrogression. Notice that I am speaking of the ordinary run of men. All the best men in these days get into the large steam services and regular home trade lines; the residuum, which find berths in sailing vessels and "ocean tramps" are, I am afraid, a poor lot; too often they try to bluster off their incompetency by "cheek," and being generally less respectable than the better class of seamen, are more often seen drunk on shore.

This state of things is the more to be regretted from the fact that the very vessels where seamanship is most required, have, as a rule, the worst men. In the large well appointed steamships of the present day—the vessels which get the pick of sailors—a very little navigation and seamanship goes a long way and lies mostly between the engineers and the master; the seamen having little to do but clean bright-work, holystone decks and so on. Large steamers will never breed sailors and navigators in the same way that sailing ships used to do, and whilst men can get berths in steamers where the feeding, pay, and accommodation are good, whilst their hardest work is holystoning, and where they can count on having their watch below all the voyage; it is only natural that they should prefer those vessels to a sailing ship where their hours are longer, food worse, and where they are always liable to be roused out to 'bout ship or shorten sail, besides being away from home, if they have one, for a twelvemonth or more; and once getting into these easy going berths little they care about knowing how to sew a "double butt" make a "single mathew walker' and that sort of thing.

In the old days, when the apprenticing system was in full swing, and even up to ten or fifteen years ago, an incompetent A.B. was reduced to ordinary seaman, and had his pay curtailed. As things are at present this could not be done; it would often be a case of reducing two-thirds of a crew. Most of the time in steamers no seamanship is *asked* from the men, beyond steering, which a green hand will often do as well in a steamer, sometimes better, than an old sailor, and at "soap and soda" a green hand is equal in every

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respect to an A.B., so that generally the best men are, to an extent, handicapped, and are in that way often made to feel that with all their abilities they are no better than the lubbers by whom they are surrounded. I think that these are the principal reasons why the able seaman is becoming a rare article.

But when you come to compare Jack with Dagoes, Coolies, and Dutchmen, it is another matter; and there I am a great believer in one redeeming point of superiority in the Anglo-Saxon, be he British or American, which is that in an emergency he is more to be relied on than any "Dutchman or Coolie" you can pick out. Let me give two cases in point.

I was once in a steamer which shifted her cargo and went over on beam ends in mid-Atlantic during an equinoctial S.W. gale. About twelve feet of water got into the engine-room through the timbers, and washed all the fires out. The deck to leeward was immersed to the lee-hatch coamings, and we lay perfectly helpless and in a desperate condition.

Fortunately we had a British crew. They turned to like men, worked like the devil for five nights and four days without cessation, shifting coal and grain (in bags) to windward, feeding in their "spells" on tinned meat and biscuit—and saved the ship. Lascars or foreigners would never have stood to it. In fact, as it was, some of the firemen—Irish Catholics—started to their prayers, and were only gradually shamed into work by the example of others. We never got even a "thank you," by the bye. Not that we expected it.

Another steamer went over in a similar manner, though not so badly, but the gale was a severe one, part of the deck houses were washed away, and thing looked rather bad. Wanting the men, several were found missing, and it was feared that they had been washed overboard by the heavy sea which had swept the decks, but on going down into the lower forecastle three "Dutchmen" were found in their bunks, their heads rolled up close in blankets, trying to shut out the actual presence of danger "a la ostrich." They were so paralysed by "funk" that they had to be cuffed and kicked into life. As to Lascars, perhaps the *El Dorado* affair still lingers in the minds of nautical men, and if any of your

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readers happen to come across a Hooghly pilot, let him ask him how they manage to handle their brigs in a cyclone.

With all Jack's faults, many of which are the natural outcome of bad usage and BAD OFFICERING, his pluck still remains, and as our American cousins say, "Bully for the British bull-dog yet."

I trust that over legislation may not nurse him into a hopeless duffer and that steamers may not *quite* extinguish him.

I am, Sir, yours truly, TRUE BRITON.

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## OLD TIMES.

*To the Editor of the "Nautical Magazine."*

DEAR SIR,—I have just had an overhaul amongst some old favourite letters, and found the last letter received from my late captain with whom I sailed as mate; should you consider it worthy of a space in your *Nautical Magazine* for the benefit of your shipmasters, I will be pleased. I have been a constant reader of your Magazine for over twenty years, and have held the position of Harbour Master of this port for the past twenty-six years. During that time great improvements have taken place: from almost a fishing village we have the finest ships afloat, including the Duke line of screw steamers. There is a great future before us. Our weekly export of coal is between 30,000 to 40,000 tons of coal, and we expect to export 120,000 bales of wool this season.

Yours faithfully, D. T. ALLAN,

Harbour Master and Chairman to the Local Marine Board, Newcastle, N.S.W.

Grangetown, 10th March, 1838.

Mr. David Allan,— Schooner *Hart*.

Dear Sir,—Although not much older than you, either as a man or a shipmaster, I may have seen, and perhaps observed, a little more of the world than you, and, according to promise, I take this method of conveying to you what I think may be useful to you in your new station; in what may follow I trust you will take the good, if any, and reject the bad. Whatever may appear this is surely preface enough.

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When I got the *Hanover* I stood much in the same position that you do now. I had served four years as an apprentice, and been four years mate. I was also much about the same age, and was wholly unknown to the owners; so were they to me. Notwithstanding that, I never hesitated to take command of the *Hanover*, and the first voyage, although the most difficult, was the quickest and best that I made with her, and I felt that I could have done the same two years before. You are going to have rather a more favourable commencement. You are along with gents who have known you all along and would have never requested you to take command of the *Barossa* had they thought you in any way unqualified for it, so that in the first place I would advise you to set about your new duties with all manner of confidence, and without any particular anxiety as to the result. From what I know of you, both as regards ability and disposition, I think you will do well.

My reminding you here of your duty to God may be superfluous, but it can do no harm; we are naturally so backward in everything of that kind, and without attending to this you will never be able to serve your employers from a right motive; you may be fortunate and you may be rich, but you will never be truly happy.

As a seaman, you have had experience enough to begin with, but you should take every opportunity to acquire more; try and get a habit of observation, take notice of the good and bad qualities of other ships as well as your own, converse with those who are most likely to improve your knowledge of sea affairs, and read all the books that relate to these things. I have seen a book called "Letters to young Shipmasters," and many others that might be of use, but I don't advise you to burden your memory with stuff out of books at the first, as most of it is only theory; make a good use of the practical knowledge you have to begin with. You will perhaps think it quite unnecessary in me saying anything about the treatment of your men; you will think that you surely know how to manage them, but do not come too hastily to a conclusion there. The happiness of the greatest part of your life depends upon it. I am not very well qualified to advise you on this point, but I will tell you what I think. Some shipmasters have adopted the erroneous idea that sailors are not like other men, that they are

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not susceptible of kindness, that they won't do with good treatment, that the more lenient you are to them, the more turbulent and rebellious they become. Although I was never entirely of that opinion, I was somewhat inclined to think in that way, and acted accordingly; no person could ever say I was unkind to men or took a pleasure in annoying them, I gave them plenty to eat and drink, and never required more work from them than what was customary, but for all that I seldom had a crew a second voyage with me. I could not conceive what was wrong. I never had a contented crew, and was never happy myself. It would be out of place here, neither is it necessary, to make you acquainted with the circumstances which caused me to change my opinion with regard to that as well as many other things. I found that although I took no pleasure in annoying my men, I at the same time took none in promoting their happiness, I interfered with the merest trifles, and was never charitable enough to forgive a fault, but now I am convinced that the surest and easiest way of being happy yourself is to try and promote the happiness of others; you will meet with refractory characters who cannot appreciate your behaviour to them, however kind; such characters when they see you like quietness and regularity, will try to annoy and irritate you if they can; do not get vexed, but tell them you do not know whether to pity or despise them most, and get clear of them as soon as you can. So much for Jack.

I showed you my system of book-keeping, but I am afraid you will forget it; your best plan is to go through a course of it the first opportunity. I would recommend Moorsom's book. After having learned that, you will be capable of adopting any plan that suits you best. Do not think that you can do without it. A few week's attention will give you the benefit of the art through life. I would hardly trust a man as a shipmaster who has not a knowledge of book-keeping. There are so many things put down by guess and so many more not put down at all, that their accounts are quite erroneous, but they generally look out to keep themselves safe. My opinion is, that you should lose what you cannot account for. Never put it down in any other shape; it is your own neglect. Avoid covetousness and dishonesty of every description. You are not

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entitled to discount on the payment of ship's accounts. It is your owners' cash, and they are under all circumstances entitled to the discount or credit for the same. You already know my opinion on smuggling. It is certainly dishonest in the sight of God and man. Those who are perverse enough to call it honest can surely never call it honourable. A smuggler has always been looked upon as a secondary character in society. It has a debasing, abominable influence upon a man's disposition. If I had had letter paper I would not have spun this out so long, but sometimes cannot easily stop till brought up in this kind of way.

I will conclude (if my memory has not failed me) in something like the words of Benjamin Franklin—"Be honest and you will be respected; be frugal and industrious and you will be rich; be virtuous and you will be happy, at least you will be in the fair way and stand the best chance of all these blessings."

I will always be happy to hear of your welfare, and remain,

Dear Sir, your sincere friend,

ALEXANDER CARFRAE.

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## OUR LIBRARY TABLE.

The various *Nautical Notices*—British and foreign—continue to be numerous and important; and we trust our readers use them in correcting their charts to date.

The books, pamphlets, and papers on our table are as follows:—

*Grosse Haverei* (*General Average*). *Die Gesetze und Ordnungen der Wichtigsten Staaten über Haverie-Grosse in original text, &c., &c.* Von Rudolph Ulrich, Berlin, 1884. Ernst Siegfrid Mittler and Sohn. We propose in our next number to give a more extended notice of this valuable work on General Average. It is a concise summary of the rules on the subject, of all the maritime nations of the world.

Of the publications of the Meteorological Office we have *Hourly Readings*, 1882, Part III., July to September, and the *Monthly Weather Report for May*, 1884, which require no remarks beyond the expression of satisfaction at the care with which the mass of

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figures is collated and arranged. *Tide Tables for the British and Irish Ports* for the year 1885, computed by Staff-Commander H. R. Harris, R.N., always a welcome and excellent work, but not used as much as it should be ; it is well to note that for the majority of places connected with the British and Irish ports the constant of height is now given as well as the constant of time. *Rates of Chronometers on Trial* for purchase by the Board of Admiralty *at the Royal Observatory*, Greenwich, 1884, is also before us ; together with *Tables relating to Life Salvage* on the coasts of the United Kingdom during the year ending 30th June, 1884, showing the different life-saving apparatus stations, with particulars of service rendered by the rocket apparatus, and the number of lives saved. During the year 1883-4 it is stated that 202 lives were saved by means of the rocket apparatus.

*Rivista della Marina Mercantile*, Trieste, October, 1884, contains a summary of the examination for masters and mates in the Austro-Hungarian Mercantile Marine, and other interesting papers. We have also received the current numbers of *Le Yacht;* those for the 11th and 18th October contain two papers of an interesting series on Dutch vessels, ancient and modern, very fully illustrated.

*Van Nostrand's Engineering Magazine* (U.S.), for October, amongst its numerous papers, gives the oration delivered by Vice-President R. H. Thurston, at the Philadelphia meeting of the American Association for Advancement of Science, the subject being *The Mission of Science.*

*Revue Maritime et Coloniale* (Paris), for October, is especially full of useful information, particularly on "a prime meridian," on the method of lunars, and on binoculars attached to a sextant.

*Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft. IX., continues the papers on the "Double Altitude Problem and the Harmonic Analysis of Tidal Observations.

*Mittheilungen aus dem Gebiete des Seewesens* (Pola), Nos. VII. and VIII., is a careful digest of the nautical science of the month.

We are also in receipt of the latest numbers of *Hansa*, *Das Schiff*, *L'Avenir Militaire*, the *New York Maritime Register*, the *Nautical Gazette* (U.S.), the *Scientific American*, *Forest and Stream* (U.S.), and the *San Pedro Shipping Gazette.*

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## MARINE INVENTIONS.

*The following list has been compiled for this Journal by Messrs. W. P. Thompson and Boult, British and International Patent and Trade Mark Agents and Consulting Engineers, of* 323, *High Holborn, London, W.C., and* 6, *Lord Street, Liverpool :—*

### PATENTS PUBLISHED.

5889. John Standfield, of Westminster Chambers, City of Westminster. "Improvements in hydraulic lifts, floating docks, pontoons, and other floating structures, and in appliances connected therewith." In connection with floating docks, a rigid arm or rigid arms are provided, which project from the side of the dock to a fulcrum upon the shore or upon another floating structure, and, by means of this arm or cantilever, list of the dock is prevented. The fulcrum may be so arranged as to be capable of being raised or lowered, and its traverse may be obtained by screw or hydraulic gear. In some cases a link connects the fulcrum with a rocking weight, which admits a limited amount of play, but not any considerable deviation; in the link a dynamometer may be inserted. When a floating structure carries the fulcrum water ballast will be employed in such structure, and the shifting of the ballast allows adjustment of the fulcrum within wide limits. Instead of a cantilever rigidly connected with the floating dock, a pair of long and massive links are sometimes used, which are jointed to the side of the dock and to a support on shore; the upper link has spring connections, allowing it to yield to some extent. The support and fulcrum may be connected with valves on the pontoon in such a manner as to control the admission or withdrawal of water from the pontoon. Among other various improvements referred to, the inventor states that he makes docks of a U form which may have moveable sides so that the whole folds together and forms a shiplike structure which can be readily towed from place to place and may even have its own propelling mechanism. The sides may sometimes be made capable of vertical adjustment. Further improvements are also specified.

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5993. December 31, 1883. Francis Wentworth Brewster, of Bloomsbury, in the County of Middlesex. "Improvements in or applicable to lifeboats, rafts, and analogous floating structures." This invention relates especially to lifeboats, rafts, and similar floating structures built on the principle of the *Catamaran*, that is to say, with separate independent tubular or other pontoons, and the like, to which a suitable superstructure is attached. The invention comprises various forms of such vessels, and its object is to render craft of this kind more serviceable, handier, and less likely to capsize. Certain forms of such craft may be used, amongst other purposes, for ferrying animals. The craft may be formed in separate sections or watertight compartments, which may be readily connected when required, whilst each has sub-divisions or compartments. The connection between the several pontoons or compartments is best formed by arched structures, and the several portions may be hinged so that the whole folds up and occupies but little space when not in use. Where heavy articles are to be carried the arched connections may be fitted with means for suspending the said articles. These boats, rafts, or the like, may also be fitted with a mast, rudder and oars.

584. January 3, 1884. Samuel Baxter, of Great St. Helens, in the City of London, engineer. "Improvements in capstans for working chain cables and wire and other ropes." The object of this invention is to facilitate the working of chain cables and wire and other ropes to ensure greater safety of the men working the same, and to prevent the destructive effects of exceptionally violent strains, and to dispense with the usual method of "fleeting." The body of the capstan is made with a wheel for working the rope, &c., and with a cable holder for chain cables; these revolve on the spindle; the bar head and pawl are separate from the capstan, but attached to the spindle, on which there is a carrier capable of moving vertically free from the spindle. The carrier supports a series of friction plates working in conjunction with another set of friction plates, the two sets of plates being acted upon by tension rods fitted to the carrier and acted upon by a screw; by this means sufficient friction for "bearing in" is produced, but an unexpectedly heavy strain causes yielding and obviates all danger.

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# TIDE TABLES FOR NOVEMBER, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | London Bridge. | | Hull. | | North Shields | | Leith. | | Devonport. | | Dover. | | Weston Super-Mare. | | Liverpool. | | Greenock | | Queenstown | | Kingstown. | | Londonderry. | | Brest. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| S | 1 | — | 0 18 | 4 23 | 4 44 | 1 22 | 1 43 | 0 16 | 0 38 | 3 29 | 3 54 | 9 0 | 9 23 | 4 37 | 5 3 | 9 17 | 9 38 | 9 57 | 10 20 | 2 51 | 3 14 | 9 10 | 9 32 | 5 58 | 6 19 | 1 43 | 2 5 |
| S | 2 | 0 35 | 0 56 | 5 5 | 5 26 | 2 4 | 2 24 | 0 59 | 1 20 | 4 18 | 4 42 | 9 46 | 10 9 | 5 27 | 5 51 | 9 59 | 10 20 | 10 43 | 11 6 | 3 37 | 3 59 | 9 52 | 10 12 | 6 41 | 7 3 | 2 25 | 2 45 |
| M | 3 | 1 17 | 1 39 | 5 47 | 6 10 | 2 44 | 3 4 | 1 41 | 2 2 | 5 4 | 5 26 | 10 31 | 10 56 | 6 15 | 6 39 | 10 42 | 11 4 | 11 29 | 11 52 | 4 21 | 4 44 | 10 32 | 10 53 | 7 25 | 7 46 | 3 6 | 3 28 |
| Tu | 4 | 2 0 | 2 23 | 6 33 | 6 56 | 3 25 | 3 47 | 2 23 | 2 44 | 5 48 | 6 11 | 11 21 | 11 46 | 7 3 | 7 26 | 11 27 | 11 50 | — | 0 16 | 5 7 | 5 31 | 11 15 | 11 38 | 8 7 | 8 28 | 3 51 | 4 14 |
| W | 5 | 2 44 | 3 6 | 7 19 | 7 42 | 4 10 | 4 34 | 3 6 | 3 29 | 6 34 | 6 57 | — | 0 11 | 7 49 | 8 11 | — | 0 18 | 0 40 | 1 4 | 5 55 | 6 19 | — | 0 2 | 8 49 | 9 11 | 4 37 | 5 0 |
| Th | 6 | 3 28 | 3 50 | 8 5 | 8 29 | 4 58 | 5 23 | 3 52 | 4 17 | 7 20 | 7 43 | 0 36 | 1 2 | 8 33 | 8 55 | 0 37 | 1 1 | 1 28 | 1 52 | 6 43 | 7 7 | 0 27 | 0 52 | 9 34 | 9 57 | 5 24 | 5 48 |
| F | 7 | 4 15 | 4 39 | 8 53 | 9 17 | 5 48 | 6 14 | 4 42 | 5 8 | 8 6 | 8 30 | 1 28 | 1 54 | 9 17 | 9 39 | 1 25 | 1 49 | 2 16 | 2 40 | 7 31 | 7 55 | 1 17 | 1 43 | 10 22 | 10 50 | 6 13 | 6 38 |
| S | 8 | 5 8 | 5 29 | 9 43 | 10 12 | 6 41 | 7 10 | 5 36 | 6 6 | 8 54 | 9 20 | 2 20 | 2 46 | 10 1 | 10 23 | 2 13 | 2 39 | 3 4 | 3 29 | 8 20 | 8 45 | 2 10 | 2 38 | 11 23 | 11 59 | 7 5 | 7 34 |
| S | 9 | 5 56 | 6 23 | 10 48 | 11 18 | 7 41 | 8 14 | 6 37 | 7 10 | 9 47 | 10 15 | 3 13 | 3 40 | 10 47 | 11 15 | 3 7 | 3 37 | 3 56 | 4 24 | 9 12 | 9 41 | 3 7 | 3 39 | — | 0 39 | 8 3 | 8 34 |
| M | 10 | 6 53 | 7 26 | 11 55 | — | 8 51 | 9 30 | 7 45 | 8 22 | 10 46 | 11 20 | 4 8 | 4 38 | 11 47 | — | 4 10 | 4 47 | 4 55 | 5 29 | 10 13 | 10 50 | 4 15 | 4 52 | 1 22 | 2 6 | 9 8 | 9 47 |
| Tu | 11 | 8 3 | 8 41 | 0 32 | 1 8 | 10 10 | 10 48 | 9 2 | 9 42 | 11 59 | — | 5 11 | 5 46 | 0 24 | 1 2 | 5 28 | 6 10 | 6 5 | 6 42 | 11 28 | — | 5 28 | 6 4 | 2 47 | 3 23 | 10 27 | 11 7 |
| W | 12 | 9 23 | 9 59 | 1 48 | 2 17 | 11 24 | 11 56 | 10 18 | 10 49 | 0 36 | 1 14 | 6 22 | 6 57 | 1 41 | 2 18 | 6 50 | 7 25 | 7 20 | 7 56 | 0 7 | 0 43 | 6 39 | 7 11 | 3 55 | 4 22 | 11 44 | — |
| Th | 13 | 10 34 | 11 10 | 2 50 | 3 21 | — | 0 25 | 11 18 | 11 45 | 1 50 | 2 23 | 7 31 | 8 1 | 2 53 | 3 26 | 7 56 | 8 23 | 8 28 | 8 58 | 1 17 | 1 48 | 7 41 | 8 10 | 4 46 | 5 9 | 0 16 | 0 45 |
| F | 14 | 11 38 | — | 3 49 | 4 15 | 0 51 | 1 15 | — | 0 9 | 2 52 | 3 18 | 8 27 | 8 52 | 3 58 | 4 27 | 8 48 | 9 11 | 9 25 | 9 50 | 2 17 | 2 43 | 8 37 | 9 2 | 5 31 | 5 52 | 1 12 | 1 35 |
| S | 15 | 0 6 | 0 27 | 4 38 | 4 58 | 1 37 | 1 57 | 0 31 | 0 52 | 3 42 | 4 5 | 9 15 | 9 36 | 4 58 | 5 16 | 9 32 | 9 51 | 10 12 | 10 33 | 8 6 | 8 27 | 9 25 | 9 46 | 6 12 | 6 32 | 1 56 | 2 16 |
| S | 16 | 0 50 | 1 11 | 5 18 | 5 38 | 2 16 | 2 34 | 1 12 | 1 31 | 4 27 | 4 47 | 9 56 | 10 16 | 5 38 | 6 0 | 10 10 | 10 29 | 10 54 | 11 15 | 8 47 | 4 7 | 10 8 | 10 20 | 6 52 | 7 11 | 2 35 | 2 54 |
| M | 17 | 1 29 | 1 48 | 5 57 | 6 15 | 2 51 | 3 8 | 1 49 | 2 7 | 5 6 | 5 24 | 10 36 | 10 56 | 6 20 | 6 38 | 10 47 | 11 5 | 11 35 | 11 53 | 4 27 | 4 45 | 10 37 | 10 54 | 7 30 | 7 47 | 3 18 | 3 30 |
| Tu | 18 | 2 5 | 2 21 | 6 33 | 6 50 | 3 25 | 3 42 | 2 24 | 2 40 | 5 41 | 5 58 | 11 15 | 11 34 | 6 56 | 7 14 | 11 22 | 11 39 | — | 0 10 | 5 3 | 5 21 | 11 11 | 11 28 | 8 3 | 8 18 | 3 47 | 4 4 |
| W | 19 | 2 38 | 2 54 | 7 7 | 7 24 | 3 59 | 4 16 | 2 56 | 3 12 | 6 14 | 6 30 | 11 58 | — | 7 31 | 7 48 | 11 56 | — | 0 27 | 0 44 | 5 39 | 5 56 | 11 45 | — | 8 33 | 8 48 | 4 21 | 4 37 |
| Th | 20 | 3 9 | 3 28 | 7 41 | 7 57 | 4 33 | 4 50 | 3 28 | 3 44 | 6 45 | 7 0 | 0 11 | 0 29 | 8 3 | 8 18 | 0 13 | 0 30 | 1 1 | 1 18 | 6 12 | 6 28 | 0 2 | 0 19 | 9 3 | 9 19 | 4 53 | 5 9 |
| F | 21 | 3 45 | 4 1 | 8 18 | 8 30 | 5 7 | 5 24 | 4 1 | 4 19 | 7 15 | 7 30 | 0 46 | 1 4 | 8 34 | 8 50 | 0 48 | 1 2 | 1 35 | 1 52 | 6 44 | 7 1 | 0 36 | 0 53 | 9 35 | 9 51 | 5 25 | 5 43 |
| S | 22 | 4 18 | 4 34 | 8 48 | 9 6 | 5 42 | 6 1 | 4 37 | 4 56 | 7 46 | 8 2 | 1 23 | 1 42 | 9 6 | 9 22 | 1 19 | 1 37 | 2 9 | 2 26 | 7 19 | 7 37 | 1 11 | 1 30 | 10 9 | 10 28 | 6 1 | 6 19 |
| S | 23 | 4 51 | 5 9 | 9 25 | 9 45 | 6 21 | 6 41 | 5 16 | 5 37 | 8 19 | 8 38 | 2 1 | 2 21 | 9 38 | 9 55 | 1 55 | 2 14 | 2 44 | 3 3 | 7 55 | 8 14 | 1 50 | 2 11 | 10 50 | 11 16 | 6 39 | 7 0 |
| M | 24 | 5 28 | 5 49 | 10 6 | 10 30 | 7 3 | 7 28 | 6 0 | 6 24 | 8 58 | 9 20 | 2 41 | 3 2 | 10 12 | 10 31 | 2 34 | 2 56 | 3 23 | 3 45 | 8 34 | 8 56 | 2 33 | 2 56 | 11 46 | — | 7 22 | 7 45 |
| Tu | 25 | 6 12 | 6 37 | 10 57 | 11 28 | 7 55 | 8 25 | 6 50 | 7 20 | 9 44 | 10 11 | 3 24 | 3 48 | 10 54 | 11 21 | 3 20 | 3 47 | 4 8 | 4 33 | 9 20 | 9 47 | 3 21 | 3 50 | 0 19 | 0 55 | 8 11 | 8 40 |
| W | 26 | 7 3 | 7 32 | — | 0 3 | 8 59 | 9 36 | 7 53 | 8 29 | 10 40 | 11 13 | 4 15 | 4 44 | 11 53 | — | 4 17 | 4 51 | 5 1 | 5 34 | 10 18 | 10 52 | 4 23 | 4 57 | 1 33 | 2 13 | 9 13 | 9 48 |
| Th | 27 | 8 5 | 8 41 | 0 37 | 1 10 | 10 13 | 10 48 | 9 5 | 9 41 | 11 51 | — | 5 14 | 5 45 | 0 28 | 1 1 | 5 29 | 6 9 | 6 8 | 6 42 | 11 27 | — | 5 30 | 6 8 | 2 49 | 3 22 | 10 25 | 11 8 |
| F | 28 | 9 21 | 9 55 | 1 42 | 2 14 | 11 21 | 11 53 | 10 15 | 10 46 | 0 30 | 1 9 | 6 17 | 6 51 | 1 37 | 2 12 | 6 47 | 7 21 | 7 16 | 7 50 | 0 2 | 0 37 | 6 35 | 7 6 | 3 52 | 4 18 | 11 38 | — |
| S | 29 | 10 29 | 10 59 | 2 45 | 3 15 | — | 0 21 | 11 14 | 11 40 | 1 46 | 2 20 | 7 25 | 7 54 | 2 47 | 3 20 | 7 51 | 8 18 | 8 22 | 8 52 | 1 11 | 1 42 | 7 36 | 8 4 | 4 42 | 5 4 | 0 10 | 0 39 |
| S | 30 | 11 30 | 11 59 | 3 44 | 4 10 | 0 46 | 1 10 | — | 0 4 | 2 51 | 3 20 | 8 21 | 8 48 | 3 52 | 4 23 | 8 43 | 9 7 | 9 20 | 9 47 | 2 11 | 2 39 | 8 33 | 8 59 | 5 26 | 5 48 | 1 6 | 1 33 |

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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* − *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −3 59 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 13 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 3 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 24 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadiz | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbelton | −0 23 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 23 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 8 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 8 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 53 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 53 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 8 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 48 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 13 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 13 | Devonport |
| Peterhead | −1 48 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 33 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 8 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 1 | N. Shields |
| Swansea bay | −0 53 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 22 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 23 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 43 | London |
| Youghall | +0 13 | Queenstown |

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# MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 347 | England — Thames River Entrances Margate and Girdler Sands | New beacons. |
| 348 | „ Thames River—Sea Reach —Leigh Middle | Alterations in buoyage. |
| 349 | „ „ Duke of Edinburgh Channel | Intended alteration in buoyage. |
| 350 | „ „ Four Fathom Channel | Alteration in buoyage. |
| 351 | „ East Coast—Halsbro' Lights | Altered in character. |
| 352 | „ „ Dudgeon Shoal | Knoll N.E. of light-vessel. |
| 353 | „ „ Blyth Harbour | Lights on east pier. |
| 354 | „ West Coast — Morecambe Bay Light-vessel | Proposed change of fog-signal. |
| 355 | Scotland—EastCoast—Lybster Harbour | Light on west pier. |
| 356 | Irish Channel—Isle of Man | Various lights and alterations. |
| 357 | France—North Coast—Touquet Point | Electric lights. |
| 358 | Baltic — Kalmar Sund — Utgrunden Light-vessel | Alteration in lights and fog-signal. |
| 359 | „ Bornholm—Adlers Ground | Intended light-vessel and fog-signal. |
| 360 | Gulf of Bothnia—Sweden—Simpnäskubb | Alteration in fog-signal. |
| 361 | „ „ Agö Island | Alteration in light. |
| 362 | „ Russian Coast — Quarken | New light. |
| 363 | Mediterranean—Spain—Almeria | Alteration in breakwater light. |
| 364 | „ Sicily — Cape Murro di Porco | Character of light. |
| 365 | „ Adriatic—Zlosela Bay Mastina Islet | Shoal near anchorage. |
| 366 | Black Sea — Kherson Bay — Fort Nicolaevski | Alteration of lights and beacons. |
| 367 | India—West Coast—Mangalore | Anchorage. |
| 368 | Bay of Bengal—Madras | Red light on pier not shown. |
| 369 | Eastern Archipelago — Java — Samarang | New light. |
| 370 | New Zealand—North Island—New Plymouth | Alteration in harbour lights. |
| 371 | Fiji Islands—Viti Levu—Nasalai Reef | Intended light. |
| 372 | North America—West Coast—Strait of Georgia—Frazer River | New Channel formed. |
| 373 | United States—Pacific Coast—California—San Francisco Harbour | New bell buoy. |
| 374 | South America—Brazil—Maranham Bay Alcantara | Alterations in light. |
| 375 | „ „ Maranham Island—Port San Luis—Areia Point | New light. |
| 376 | United States—Boston Approaches | Various shoals. |
| 377 | „ „ Delaware — Cape Henlopen, &c. | Change in character of lights. |
| 378 | „ „ Rhode Island—Sakonnet River | New light. |
| 379 | „ „ Maine — Penobscot Bay —Deer Island Thoroughfare | New fog-bell. |

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MONTHLY ABSTRACT OF NAUTICAL NOTICES—*continued.*

| No. | PLACE. | SUBJECT. |
|---|---|---|
| 380 | CANADA—Gulf of St. Lawrence—Prince Edward Island—Cape Egmont | New light. |
| 381 | „ Cape Breton Island — Mabou Harbour | New leading lights. |
| 382 | NEWFOUNDLAND — East Coast — Gull Island | New light. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

347.—ENGLAND.—*Thames River Entrances.*—For the better indication of Margate and Girdler sands, and to facilitate the navigation of the entrances to Thames river, three beacons have been placed and named as follows:—

*Margate Hook.*—A cylindrical iron mast, surmounted by an inverted cone about 33 feet above high water spring tides, has been placed on the southern side of Margate Hook (the sand in the position drying about 1½ feet at low water), with the following bearings:—Birchington church, S.E. ⅜ S.; St. Nicholas church, S. ½ W.; Herne high mill, W. by S. ¾ S.

*North Margate.*—A cylindrical iron mast, surmounted by two cones, points together, the upper one inverted and about 33 feet above high water spring tides, has been placed in 3 feet at low water spring tides, with the following marks and bearings:—Margate new church touching the east side of Margate jetty head, S. by E. ⅝ E.; Margate Hook beacon open westward of Reculvers church, S.W. by W. ¾ W.; Birchington church, S.S.W. ¼ W.

*Girdler.*—A cylindrical iron mast, surmounted by a cone, point upwards, about 33 feet above high water spring tides, has been placed on West Girdler sand, in 5 feet at low water, and 110 fathoms N.E. ¼ N. of the old beacon, which still remains; it is situated with the following mark and bearings:—Pan sand beacon, its width open westward of Girdler old beacon, S.W. ¼ S.; N.E. Shingles beacon, N.E. by E. ¼ E.; Shingles beacon, E. by S. *Variation*, 17½° *W.*



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348.—ENGLAND.—*Thames River.—Sea Reach.—Leigh Middle. —Alterations in Buoyage.*—The following alterations in river Middle buoyage, southern edge of Leigh Middle, Thames river, have been made.

*West River Middle buoy* has been moved 8 cables W. ¼ S. from its former position, and is now named *River Middle;* it lies in 21 feet, with the following marks, bearings, and distance :—The second tall chimney eastward of Garrison fort, Sheerness, in line with the west end of Mark trees, S. by E., Ely.; Canvey island beacon, three times its height, open northward of Chapman lighthouse, W.N.W.; East river Middle buoy, S.E. by E. ¾ E., distant 1¼ mile.

A new buoy, black can, named *West River Middle*, has been placed in 19 feet, with the following marks, bearings, and distances :—The first house eastward of Shoebury coastguard station, in line with the extremity of Southend pier, East; Chapman lighthouse, nearly midway between Canvey island beacon and Scarhouse (nearest the house), W.N.W.; River Middle buoy, E.S.E., distant 7½ cables; Chapman lighthouse, W.N.W., distant $2\frac{1}{10}$th miles.

*East River* or *Leigh Middle buoy* will be moved 3 cables N.W. by W. ½ W., when the ground has been cleared of the wreck of the *Thomas Lea*, which lies just N.W. of the buoy. Vessels passing about half a cable southward of River Middle buoy, and a good cable southward of West River Middle buoy, will carry the deepest water. The depths given are at low water spring tides. *Variation*, 17¼° *W.*

349.—ENGLAND.—*Thames River Entrance.—Duke of Edinburgh Channel and Black Deep.—Intended Alterations in Buoyage.*—It is intended to make the following alterations and additions to the buoyage of Duke of Edinburgh channel and Black deep, Thames river entrance :—*Knob buoy* will be moved 3 cables S.W. of its present position to cover a patch of 26 feet. *Mid Shingles buoy* will be moved 4 cables W. ¾ S., and changed from black and white chequered, to black and white vertical stripes, and named *West Mid Shingles*. A can buoy, black and white chequered, will be placed midway between West Mid Shingles (new position) and North

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Shingles, bearing W. ½ S. $1\frac{2}{10}$ths mile from North Shingles buoy, and will be named *Mid Shingles*. A conical black buoy, to be named *East Knob*, will be placed 2 cables southward of the 17 and 18 feet shoal between Knock John and the Knob, and will bear W. by S. from Knock John buoy, distant 1½ mile. A conical black buoy, surmounted with staff and globe, to be named *East Knock John*, will be placed midway between West Long sand and Knock John buoys. Further notice will be given when the buoys have been placed in position. *Variation*, 17¼° *W.*

350.—ENGLAND.—*Thames River Entrance.—Alteration in Position and Addition to Buoyage of Four Fathom Channel.*—The East Middle buoy has been moved one cable south of its former position, and is now called the *South-East Middle;* it lies in 14 feet low water spring tides, with the following marks and bearings, viz.:—Whitstable low mill, open west of the western coke chimney at Whitstable, S. by W. ½ W.; Herne high mill, in line with the west end of a yellow building on the beach next east of Herne bay coastguard station, S. by E. ½ E.; East Middle (new position), E. by N. ½ N., distant $\frac{9}{10}$ths of a mile; Middle Ground beacon, W. by N. ½ N., distant 1 mile; West Spaniard, W. ¾ N., distant $2\frac{1}{10}$ths miles. Also, a new buoy (black can) called *East Middle*, has been placed and lies in 13 feet low water spring tides, with the following marks and bearings, viz.:—Minster mill, its height north of the Middle Ground beacon, W. ¼ N., Nly.; St. Nicholas church tower, on the east end of the first house east of Reculvers coastguard station, S.E. by S.; Gilman buoy, N.E. by E. ½ E., distant $2\frac{2}{10}$ths miles; Girdler light-vessel, E. by N. ½ N. Nly., distant $2\frac{9}{10}$ths miles; East Spaniard buoy, E. ¾ S., distant 1 mile.

351.—ENGLAND.—*East Coast.—Haisbro' Lights.—Entire Alteration in Character.*—Pursuant to Notice 263, p. 790, Haisbro' low light is now discontinued, and Haisbro' high light is made *occulting*, that is to say, it once in *every half-minute* suddenly *disappears for five seconds*, and then as suddenly reappears at full power.

352.—ENGLAND.—*East Coast.—Dudgeon Shoal.—Knoll N.E. of Light-Vessel.*—A four-fathom knoll has grown up, distant $3\frac{8}{10}$ths miles N.E. of the Dudgeon light-vessel, in a place where six



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fathoms is marked on charts. Mariners are cautioned to give the same a wide berth at times when a sea is on. *Variation*, 18° W.

353.—ENGLAND.—*East Coast—Blyth Harbour—Lights on East Pier Extension.*—The eastern pier, Blyth harbour, is being extended in a S. by E. direction, and on 2nd October, 1884, two lights would be exhibited from the S.W. end of this extension. The lights, placed vertically, are fixed *red* above fixed *white*.

354.—ENGLAND.—*West Coast.—Alteration in Character of Fog-Signal at Morecambe Bay Light-Vessel.*—About the beginning of December, 1884, the character of the fog-signal on board this light-vessel will be altered, so that in thick or foggy weather it will give *three blasts* in quick succession *every two minutes*, in the manner following, viz.: Two low notes and a high note, each of two seconds duration, at intervals of two seconds, followed by an interval of 110 seconds.

355.—SCOTLAND.—*East Coast.—Lybster Harbour.—Light on West Pier.*—On 15th October, 1884, a light would be exhibited from a lighthouse, constructed of masonry, on the extremity of the west pier at Lybster harbour. It will be a *fixed red* light elevated 35 feet above high water. Position, lat. 58° 17′ 40″ N., long. 3° 17′ 15″ W.

356.—IRISH CHANNEL.—*Isle of Man.—Port St. Mary.—Light on Breakwater.*—On 1st September, 1884, and until further Notice, a light would be exhibited from the outer end of the finished portion of the breakwater in course of construction at port St. Mary point. It is a *fixed green* light, elevated 25 feet above high water, and visible from a distance of about 3 miles; it bears S.E. by S. from the pier-head, distant about 400 yards. The breakwater extends about 260 yards from the shore in an E.N.E. direction; vessels should pass eastward of the green buoy moored 70 yards north-eastward of the light, in order to avoid the portion of the work beyond the light, which is covered at high water. Vessels approaching the harbour, should keep the white and red lights in line as heretofore.

(2.) *Leading Lights at Port Erin.*—On 1st October, 1884, and until further Notice, two leading lights will be exhibited on the eastern shore of port Erin, which, kept in line, will lead into the

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port, about midway between the breakwater and the northern shore; they will be *fixed red* lights, placed 130 feet apart, elevated 33 and 52 feet respectively above high water, and visible from a distance of above five miles. The outer and low light bears E.S.E. from the extremity of the breakwater, distant 900 yards.

*Note.*—The breakwater, with the exception of a short length at the root, is covered at high-water spring tides; a black buoy, which vessels should pass northward of, marks the outer end. The arm of the landing-pier at port Erin has been destroyed.

(3.) *Ramsey Bay.*—The landing-pier, in course of construction, extends in an E. ⅛ S. direction from the shore a distance of about 720 yards; its inner end is about 30 yards southward of the proposed position shown on the published plan; this pier will not have a T head. The wooden landing-stage no longer exists.

(4.) *Peel Harbour.*—An approach road has been made to the breakwater, and a casing is in course of construction on the harbour side of the breakwater. *Variation*, 21¼° *W.*

357.—FRANCE.—*North Coast.—Canche River Entrance.—Electric Lights at Touquet Point.*—With reference to Notice 129, p. 322, on intended *electric* lights on Touquet point, south side of Canche river entrance; and exhibition of provisional lights:—On the 15th October, 1884, the electric lights will be exhibited, and the provisional lights discontinued. The electric lights will be of the same elevation as the old lights, and will (contrary to the former intention, as stated in the above-mentioned Notice), retain the same character as formerly, namely *fixed white;* they will be of the first order, and visible from a distance of about 20 miles.

358.—BALTIC.—*Kalmar Sund.—Utgrunden Light-Vessel.—Alteration in Lights and Fog-Signal.*—With reference to Notice 277, p. 798, that Utgrunden light-vessel, at the southern entrance to Kalmar sund, would be replaced by a new vessel, from which would be exhibited one fixed *red* light:—During the month of October, 1884, the new light-vessel would be placed in her station. Also, the fog-signal on board this light-vessel will be a steam siren.

359.—BALTIC.—*Bornholm.—Intended Light-Vessel and Fog-Signal on Adlers Ground.*—By Notice dated 30th August, 1884, a light-vessel will shortly be placed in 6½ fathoms water, on Adlers

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ground, S.W. of the island of Bornholm :—It will be a *group-flashing white* light. The proposed position of the light-vessel is marked by a buoy. Position approximate, lat. 54° 48¼′ N., long. 14° 20¾′ E. Also, a fog-siren will be established at this light-vessel. Further particulars will be published when the light-vessel is placed in position.

360.—Gulf of Bothnia.—*Sweden.—Simpnäsklubb Lighthouse.—Alteration in Fog-Signal.*—With reference to Notice in 1883, on intended alteration in the character of the fog-signal at Simpnäsklubb lighthouse, east side of northern entrance to Norrland channel :—A bell has been established, which, during thick or foggy weather, will give *four* strokes in quick succession at intervals of *twelve seconds.*

361.—Gulf of Bothnia.—*Sweden.—Alterations in Agö Island Light.*—The following alterations have been made in Agö island light ; and it would be re-exhibited at the end of the month of August, 1884 :—It is a *flashing white* light ; showing a flash *every thirty seconds*, visible between the bearings of N. 54° E., through west, and S. 37° E. ; elevated 88 feet above the sea, and should be seen from a distance of about 15 miles. The lighthouse, which has been rebuilt, is a white tower, 37 feet high, situated near the eastern white gable of the red dwelling house. *Variation*, 9¾° *W.*

362.—Gulf of Bothnia.—*Russian Coast.—Quarken (West Norrskär).—Permanent Light Re-exhibited, Provisional Light Discontinued.*—With reference to Notice 823, p. 895, on the exhibition of a provisional light near Quarken (West Norrskär) lighthouse, pending placing a new lantern and illuminating apparatus in the lighthouse ; the alterations having been completed, the permanent light would be re-exhibited, and the provisional light discontinued, on 10th September, 1884. The light is a *revolving white* light, as previously.

363.—Mediterranean.—*Spain.—Almeria.—Alterations in Breakwater Light.*—On 1st September, 1884, a new harbour light would be exhibited from a carriage placed near the end of the breakwater, in course of construction from the western mole of the port of Almeria. It is a *fixed red* light, elevated 24 feet above the sea, and visible from a distance of 10 miles. The carriage, rect-

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angular in shape and painted gray, is placed 49 feet within the crane on the breakwater at night, and 82 feet within it during the day; the keeper's dwelling, painted green, stands about 270 yards from the light. Position, lat. 36° 50′ N., long. 2° 28′ W.

364.—MEDITERRANEAN.—*Sicily.—East Coast.—Cape Murro di Porco.—Character of Light.*—The light on cape Murro di Porco, southern approach to Syracuse harbour, is a *flashing white* light, showing a flash *every thirty seconds*, elevated 108 feet above the sea, and visible from a distance of 16 miles.

365.—MEDITERRANEAN.—*Adriatic.—Zlosela Bay Entrance.—Shoal Eastward of Mastina Islet.*—The existence of a shoal is reported with a depth of 16 feet, lying about 3 cables eastward of Mastina islet, near the anchorage at the entrance to Zlosela bay. Position, lat. 43° 50′ 15″ N., long. 15° 33′ 50″ E.

366.—BLACK SEA.—*Kherson Bay.—Fort Nicolaevski.—Removal of Beacon, Alteration in Lights.*—On 2nd September, 1884, the beacons on fort Nicolaevski, eastward of Kinburn spit, would be removed; and the following alteration made in the lights. The fixed light previously shown is discontinued, and two leading lights are exhibited from lighthouses of iron framework, painted red, and which, kept in line, lead to the entrance of the channel over the bar. The lights show *fixed red* between the bearings of N. 85½° E., through east, and S. 9½° W.; they bear from each other N. 80½° W. and S. 80½° E., distant 112 yards. The western light is elevated 45 feet above the sea, the eastern light 63 feet. From the eastern lighthouse, a *fixed white* light is also shown between the bearings of S. 9½° W., through west, and N. 85½° E. *Variation*, 2½° *W.*

367.—INDIA.—*West Coast.—Mangalore.—Anchorage.*—Steamers and vessels calling at Mangalore should, for the present, anchor with the lighthouse bearing E. by S. (magnetic) in 5 fathoms low water. When the land winds set in, the best anchorage will be between the two mouths of the harbour, with the lighthouse bearing N.E. by E. to N.E., in 4½ fathoms low water.

368.—BAY OF BENGAL.—*Madras.—No Red Light on Pier.*—With reference to Notice 286, p. 798, the red light will not be exhibited at the end of the Madras pier, on the 1st of September, 1884, and the Notice previously given is to be considered as cancelled.

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369.—Eastern Archipelago.—*Java.—North Coast.—Light at Samarang.*—Exhibited from a lighthouse erected at Samarang, north coast of Java. It is a *revolving* light, showing a *white flash every half-minute*, elevated 105 feet above high water, and visible from a distance of 17 miles; the lighthouse, 103 feet high, consists of a twelve-sided iron tower, painted white. Position, lat. 6° 58′ S., long. 110° 25¼′ E.

370.—New Zealand.—*North Island.—West Coast.—New Plymouth.—Alterations in Harbour Lights.*—On 1st August, 1884, the flagstaff at New Plymouth (Taranaki) would be shifted to a hill, 70 feet high, near the root of the breakwater, and will bear from its end S.S.W. ¼ W., distant 533 yards, and from Motu-roa island S.S.E. ¼ E. distant about 5 cables; the truck, 93 feet above the ground, may be seen seaward of Sugar Loaf islands (Paritutu) except where intercepted by Mahanga and Motu-roa. From the flagstaff a *fixed red* light is exhibited, elevated 100 feet above the sea, and visible seaward between the bearings of E.N.E. and W.S.W., from a distance of at least 8 miles, except where obscured by the islands. Position, lat. 39° 3½′ S., long. 174° 2½′ E. A *red* leading light is exhibited from a beacon at the root of the breakwater, 30 feet above the sea, and bearing N.N.E. ¼ E., Ely. from the flagstaff, distant 500 feet. This light kept in line with the flagstaff light leads directly towards, and close to, the eastern side of the breakwater. On the exhibition of these lights, those previously shown at the town would be discontinued. *Variation*, 15¼° *E.*

371.—Fiji Islands.—*Viti Levu.—S.E. Coast.—Intended Light on Nasalai Reef.*—On 1st October, 1884, a light would be exhibited from a lighthouse erected on the south-eastern extremity of Nasalai reef, Nasalai mouth of Rewa river. It will be a *fixed white* light, visible seaward between the bearings of N.E. ¼ E. and S.W. by S.; elevated 45 feet above high water, and should be seen from a distance of 12 miles. The lighthouse, constructed of wood, is painted white. Position, lat. 18° 8′ 10″ S., long. 178° 42′ 20″ E. *Variation*, 9¾° *E.*

372.—North America.—*West Coast.—Strait of Georgia.—Fraser River Entrance.—New Channel Formed.*—With reference to Notice 197, p. 525, on the exhibition of a light from a lighthouse

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erected on North Sand head, S.W. of Sturgeon bank, northern side of Fraser river entrance. A new channel has formed through the Sand heads of Fraser river, with a depth of 8 feet at low water summer spring tides, and it has been marked with black spar buoys numbered consecutively from 1 to 9. Vessels making for the new channel should, to clear the Sand heads, keep on the leading marks of Howe sound until Garry bush (leading tree) bears N.E. by E., when it should be steered for; leave the black buoys a quarter of a cable on the port-hand, and after passing No. 9 buoy steer for No. 15 fairway buoy, which may be left on either hand, and thence to Garry point. The Sand heads lighthouse bears S.E. ½ S. from No. 1 buoy, distant $1\frac{9}{10}$ths mile.

*Note.*—A buoy, coloured red, is moored on the South sand head. There are 5 feet at low water summer spring tides in the old or South channel. *Variation*, 23¼° *E.*

373.—*United States.—Pacific Coast.—California.—Bell Buoy off San Francisco Harbour.*—On or about November 1, 1884, a bell buoy will be moored on South shoal, off San Francisco harbour, in place of the 1st-class nun buoy now there. This buoy will be rung by the motion of the sea.

374.—*South America.—Brazil.—Maranham Bay.—Alcantara.—Alterations in Light.*—On 1st September, 1884, a light would be exhibited (in lieu of the former light) from a lighthouse recently erected at Alcantara, western side of Maranham bay; it is a *fixed white* light, elevated 64 feet above high water, and visible from a distance of 9 miles. Position, lat. 2° 24½′ S., long. 44° 23½′ W.

375.—*South America.—Brazil.—Maranham Island.—Port San Luiz.—Light on Areia Point.*—On 1st August, 1884, a light would be exhibited from a lighthouse recently erected on fort St. Antonio, Areia point, northern side of entrance to port San Luiz or Maranham. It is a *fixed* light, showing *white* through an arc of 67½°, or between the bearings of S.E. and S.S.W.; and *red* through an arc of 202½°, or between the bearings of S.E. and W.N.W. It is elevated about 21 feet above high water, and visible, the white light from a distance of 7 miles, and the red light from a distance of 4 miles. Position approximate, lat. 2° 30¼′ S., long. 44° 17¾′ W. *Variation*, 5½° *W.*

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376.—UNITED STATES.—*Boston Approaches.*—(1.) *Shoal in Broad Sound.*—This is a shoal, of small extent, with 18 feet water on it, lying in the northern part of Broad sound, with the following bearings and distances:—Nahant head, N.E. by E., distant $1\frac{5}{16}$ths mile; Bass point, N.N.W., distant $\frac{7}{8}$ths of a mile. Position, lat. 42° 24′ 10″ N., long. 70° 55′ 30″ W.

(2.) *Shoal near Boston Main Channel.*—This shoal, with a depth of 18 feet, lies between Boston ledge and Shag rocks, near the main ship channel entrance to Boston harbour, with Boston lighthouse bearing W. by S. ½ S., distant three-quarters of a mile. Position, lat. 42° 19′ 58″ N., long. 70° 52′ 32″ W.

(3.) *Shoal in Boston Bay.*—This shoal, with 11 feet on it, lies off the south shore of Boston bay, with Little Black rock bearing S. by W., distant one-eighth of a mile. Position, lat. 42° 16′ 25″ N., long. 70° 49′ 25″ W. *Variation*, 12° *W.*

377.—UNITED STATES.—*Delaware.—Change of Characteristics of Lights.*—On October 1, 1884, the characteristics of the lights named below will be changed as follows:—

*Cape Henlopen Main Light.*—A *red cut* will be introduced into this light so that it will show red within an angle of 45 degrees formed by a line extending from the light to Brandywine shoal light, (passing through cape Henlopen front beacon and outside The Shears and Brown shoal), and a line extending from the light and just clearing the N.W. end of the ice-breaker part of Delaware breakwater. The eastern edge of the cut marks the range line now existing between cape Henlopen main light and the front beacon. When the light shows white, vessels between Brandywine shoal and cape Henlopen are clear of all shoals to the westward, including and below Brown shoal. When faintly tinged with red it indicates proximity to the old range line, and when bright red it is dangerous to pass farther to the westward until reaching the point above Brown shoal where a change of course is made to go up the bay. Vessels seeking harbour above or behind the breakwater, and wishing to enter at the northern end, will be clear of the ice-breaker as soon as the light changes to white.

*Cape Henlopen, Front Beacon.*—This light will be discontinued,

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as the eastern edge of the red cut in the main light will answer as a substitute.

*Delaware Breakwater Range, Rear Light.*—This light will be changed from fixed *red* to fixed *white*.

*Reedy Island Light.*—A *red cut* will be introduced into this light which will show red within the quadrant extending from the south around to the west. To vessels bound down the bay with the Finn's point ranges on, or up the bay with the port Penn ranges on, the change of this light from white to red will indicate that the turning-point, the intersection of these two ranges, has been reached.

*Finn's Point, Rear Light.*—A *red cut* will be introduced into this light which will mark the Bulkhead shoals and assist vessels in judging of the proper point at which to commence the turn at this locality. Vessels running on the ranges established here, when nearing the buoys next above or below the turning-buoy, will see a faint reddish light; when abreast of either these buoys the light will appear bright red. The red light indicates the points at which the turn should commence.

378.—UNITED STATES.—*Rhode Island.—Sakonnet Light-Station. —Little Cormorant Rock, Mouth of Sakonnet River.*—On and after November 1, 1884, a *fixed white* light, varied every 30 seconds by three *red flashes* (intervals between flashes, 10 seconds), will be shown from the lighthouse recently erected on Little Cormorant rock, mouth of Sakonnet river, Rhode island. The apparatus lights the entire horizon; elevated 43 feet above the ground; visible 14 miles. The structure is a cast-iron pier, surmounted by a cast-iron tower and lantern. The pier and tower are painted red; lantern black. The approximate position of the lighthouse is lat. 41° 27′ 10″ N., long. 71° 12′ 9″ W.

379.—UNITED STATES.—*Maine.—Fog-Bell at Deer Island Thoroughfare Light-Station.*—On October 15, 1884, a fog-bell, struck by machinery, will be established on the west side of the light-station buildings at Deer island thoroughfare, Penobscot bay, Maine. During thick and foggy weather this bell will be sounded, giving a double blow at intervals of 15 seconds.

380.—GULF OF ST. LAWRENCE.—*Northumberland Strait.—Prince Edward Island.—Light on Cape Egmont.*—On 1st September,

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1884, a light would be exhibited from a lighthouse erected on the extremity of cape Egmont, west coast of Prince Edward island :—It is a *fixed red* light, visible between the bearings of south, through east, and N.W. ; elevated 72 feet above high water, and should be seen from a distance of 10 miles. The lighthouse consists of a square white tower, with dwelling attached on the eastern side, roofs painted brown ; a store-house, painted brown, stands about 50 feet to the south-eastward. Position, lat. 46° 24′ 20″ N., long. 64° 7′ 45″ W. *Variation*, 22½° *W.*

381.—Gulf of St. Lawrence.—*Cape Breton Island.—Leading Lights at Mabou Harbour Entrance.*—On 15th July, 1884, two leading lights were exhibited from masts (shed painted white at the base) at Mabou harbour entrance, which, kept in line, lead through the dredged channel past the breakwater :—The outer light is *fixed white*, shown from the extremity of the breakwater pier on the S.W. side of the dredged channel ; elevated 25 feet above high water, and visible seaward from a distance of 9 miles. Position approximate, lat. 46° 5′ N., long. 61° 28′ W. The inner light is *fixed red*, shown on the shore at McFadyen's wharf, and distant 1,000 yards from the outer light ; elevated 30 feet above high water, and visible from a distance of seven miles.

382.—Newfoundland.—*East Coast.—Light on Gull Island.*—On 8th September, 1884, a light would be exhibited from a lighthouse erected on the summit of Gull island, off cape St. John, east coast of Newfoundland. It is an *occulting white* light, visible for about *eleven seconds* and eclipsed for *nine seconds ;* elevated 525 feet above the sea. The lighthouse, 48 feet high, constructed of iron and circular in shape, is painted red and white in vertical stripes, four of each ; the keeper's dwelling, 112 feet W. by N. from the lighthouse, is connected therewith by a covered way, both painted white. Position, lat. 49° 59′ 55″ N., long. 55° 21′ 35″ W.

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# OUR OFFICIAL LOG.

## INSTRUCTIONS TO SURVEYORS.—BARGES, FLATS, TROWS, DUMB BARGES, &c.

1. One object of this circular is to instruct the Surveyors in what way to distinguish vessels which may or may not come for registry under the Merchant Shipping Act, 1854, but to which the Canal Boats Acts apply.

2. Surveyors are instructed that, in filling up a description of the vessel and her rig in their forms (Certificate of Survey, Surveys 59), in the case of small vessels, the description of the rig should not be confused with the description of the vessel.

3. The terms "Schooner," "Brig," "Barque," &c., describe the rig.

4. The terms "Barge," "Billy-boy," "Trow," "Keel," "Lighter," "Lump," "Wherry," "Mud-flat," "Dumb Barge," "Monkey Boat," "Canal Boat," &c., on the other hand, describe the vessel and not the rig: *e.g.*, what is known as a barge may be rigged in various ways, or not at all, and the rig of all the other vessels mentioned above is various.

5. In cases in which Surveyors are called on to measure for tonnage under the Merchant Shipping Act, 1854, barges, and craft not rigged for sailing outside smooth water, the words "*Dumb Barge*," "*Dumb Flat*," "*Canal Boat*," &c., should, in future, be written in the form (Certificate of Survey, Surveys 59), for description of vessel, and under the heading *rig* the words *not rigged* should be written.

6. In cases where they are rigged for sailing, *e.g.*, in the case of certain sailing barges on the Thames, the words "Barge, sailing," should be written to describe the vessels, and "spritsail," or "topsail," as the case may be, to denote the rig.

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EXAMPLES.

| | |
|---|---|
| Number of Decks ... | Number of Decks ... |
| Number of Masts ... | Number of Masts ... *Nil.* |
| Rigged ... ... ... *Spritsail.* | Rigged ... ... ... *Not.* |
| Stern ... ... ... | Stern ... ... ... |
| Build ... ... ... | Build ... ... ... |
| Galleries ... ... ... | Galleries ... ... ... |
| Head ... ... ... | Head ... ... ... |
| Framework and description of vessel ... ... *Wood. Barge, sailing.* | Framework and description of vessel ... ... *Wood. Dumb Barge* or "*Canal Boat*" or "*Lighter*," &c., &c., &c., as the case may be. |
| Number of bulkheads ... | Number of bulkheads ... |
| Number of water ballast tanks, and their capacity in tons ... ... | Number of water ballast tanks, and their capacity in tons ... ... |

T. H. FARRER, Secretary.

THOMAS GRAY, Assistant-Secretary.

Board of Trade, Marine Department, September, 1884.

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OFFICIAL RETURN OF BRITISH WRECKS IN SEPTEMBER, 1884.—The number and tonnage of British vessels, respecting whose loss reports were received at the Board of Trade during the month of September, 1884, and the number of lives lost are as follow:—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing..... | 56 ..... | 11,146 ..... | 42 |
| Steam ..... | 17 ..... | 8,439 ..... | 2 |
| Total ..... | 73 ..... | 19,585 ..... | 44 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in September relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—THOMAS GRAY, Assistant-Secretary, Marine Department.—Board of Trade, 1st October, 1884.

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TRADE MARKS IN RUSSIA.—The Russian Customs Department have issued an Order, dated 3rd September, 1884, that goods bearing Trade Marks with effigies of the Holy Virgin, Saint George, or other Saints, will not be admitted into the Russian Empire.

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THE Board of Trade have awarded a Binocular Glass to Captain B. Rehberg, master of the German barque, *Vandenbergh*, of Rostock, in acknowledgment of his humanity and kindness to the ship-wrecked crew of the ship, *Aros Bay*, of Glasgow, whom he received on board his vessel when they abandoned their ship off Cape Horn, on the 28th June last, and conveyed to Valparaiso.

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HER MAJESTY THE QUEEN has been graciously pleased to confer the Albert Medal of the Second Class on William Macgregor, Esq., M.D., C.M.G., Chief Medical Officer and Receiver-General, Fiji. The following is an account of the services in respect of which the decoration has been conferred:—The *Syria*, bound from Calcutta to the Fiji Islands, with 494 Coolie emigrants, stranded on the evening of Sunday, 11th May last, upon the Nasalai Reef, some 25 miles to the eastward of Suva, Fiji. This reef is exposed to the full force of the south-east trade winds, which, at the time of the wreck, were blowing with great force; also to the long roll of the sea from the vast expanse of the South Pacific. Owing to the peculiar set of the tides over the reef, the shipwrecked emigrants who committed themselves to the water in hopes of swimming ashore were irresistibly carried in an opposite direction, and swept out into the surf, which was breaking thirty feet high over the edge of the reef. The captain did not leave the wreck until he believed that all the people were out of it. He then started from the after-part of the ship, bringing an Indian woman —who was half drunk—along with him, and was conducting her across a piece of broken mast which lay at a slight incline across the gap that existed between the two portions of the hull, when both were knocked over and over towards the perpendicular edge of the reef, the woman grasping the captain by the neck like a vice. An official who was at hand, at the risk of his own life, dashed

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into the breakers to their rescue, but no sooner had he reached the drowning couple, than he, too, was thrown down, and all three were being rolled along to destruction when Dr. MacGregor, who was at the time standing by the wreck of the fallen mainmast, leading and directing the removal of the struggling Indians, instantly seized a line forming part of the ship's running rigging, that was floating by, and taking two or three turns with it round his wrist, plunged into the surf at the imminent risk of his own life, grasped the struggling bodies of the drifting people, and by main strength dragged them back into shallow water from the destruction which appeared to be inevitable. It is also stated that, but for the energetic, able, and cool way in which Dr. MacGregor led the relieving party, the loss of life, which was great—59 in all—must have been appalling.

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THE Board of Trade have awarded their Silver Medal for gallantry to Mr. John Fowler, Acting Superintendent of Police, and their Bronze Medal for gallantry to Emosi, a native of Fiji; Ratu Joshua, native Sub-Inspector of Police, Constable Apraim, and Police Corporal Swani, for their gallant services in saving life at the wreck of the coolie emigrant ship *Syria*, on the Nasalai reef, Viti Levu, Fiji, on the night of the 11th May last.

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THE Board of Trade have awarded a binocular glass to Captain P. H. Simonsen, of the German barque *Moctezuma*, in acknowledgment of his humanity and kindness to a portion of the shipwrecked crew of the *Mignonette*, abandoned at sea on the 5th July, 1884.

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### OFFICIAL INQUIRIES AT HOME, 1884.

2307. *Lena*, s.s., and *Shipwash*, light-vessel; former built at Sunderland, 1865; owned by Mr. Charles Norwood and others; tonnage, 679; Cronstadt to London; general cargo; in collision. July 19, 1884. Inquiry held at Greenwich, September 11, 1884, before Balguy, Judge; Ronaldson and Beasly, N.A. Master of

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*Lena* in default for not making sufficient allowance for the tide, and setting a course which would bring his ship in dangerous proximity to the light-ship. Certificate suspended for three months. Recommended for one as mate.

2312. *Jane Clark*, s.s.; built at Belfast, 1883; owned by Mr. Robert Clark, and others; tonnage, 532; West Coast of Africa to Bordeaux; ground nuts and two passengers; stranded near Point de Galla, Africa, June 9, 1884. Inquiry held at Glasgow, September 24, 1884, before Scott and Mitchell, Justices; Hight and Ward, N.A. Casualty due to an error in calculating the distance from the land.

2317. *Susan Hendry*, brigantine, and *Vigilant*, steam fish carrier; former built at Perth, 1880; owned by Mr. E. Kemp, and others; tonnage, 128; Ramsgate to Sunderland; ballast; latter built at Port Glasgow, 1880; owned by Great Northern Steam Fishing Company, Limited; tonnage, 95; London for North Sea Fishing Fleet; empty fish boxes and ice; in collision about eleven miles from Shipwash Light-ship, August 8, 1884, when former vessel sunk. Inquiry held at Hull, September 29, 1884, before Twiss, Judge; Anderson and French, N.A. Collision due to *Vigilant* not complying with the Rule of the Road. Master in default for not having a proper look-out, or an officer in charge of the watch. Certificate not dealt with.

2319. *Woodside*, s.s.; built at Sunderland, 1882, owned by Mr. T. G. Greenwell and others, tonnage, 1,140; Cette to Baltimore; ballast; stranded and lost on Cabo de Creux, August 12, 1884. Inquiry held at Sunderland, October 3, 1884, before Booth and Horan, Justices; Curling and Kennedy, N.A. Stranding due to courses set not being made good, and to master neglecting the lead. Cautioned.

2320. *Margaret Kendall*, schooner; Runcorn to Wick; salt; lost with all hands on Proudfoot Rocks, Wick Bay, August 23, 1884. Inquiry held at Wick, September 26, 1884, before Harper and Bruce, Justices; Parfitt, Hyde and Kiddle, N.A. Loss due to person in charge attempting to leave Wick Bay at night, with a light wind and strong tide, in order to obtain a better anchorage, the harbour being full.



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2325. *Carrie*, s.s.; built at Middlesborough, 1884; owned by Mr. J. M. Lennard and others; tonnage, 928; Alexandria to Antwerp; wheat; struck Pearl Rock, near Gibraltar, and foundered, September 3, 1884. Inquiry held at Sunderland, October 4, 1884, before Booth and Horan, Justices; Curling and Kennedy, N.A. Loss of vessel due to improper navigation on part of master. Certificate suspended for six months.

2327. *Acuba*, s.s.; built at Sunderland, 1883; owned by Mr. Thomas Stockdale and others; tonnage, 1,194; Perth Amboy, U.S.A., to Miramichi; ballast; stranded near Friar Rocks, off Ship Harbour, N.S., June 9, 1884. Inquiry held at Sunderland, October 7, 1884, before Booth and Horan, Justices; Castle and Vaux, N.A. Stranding due to courses set not having been made good, and to master neglecting the lead. Admonished to be more careful in future.

2328. *Bengeo*, s.s.; built at Whitehaven, 1882; owned by Steamship Bengeo Company (Limited); tonnage, 774; Demerara to Puerto Cabello, Venezuela; ballast; stranded near Point Galera, Trinidad, August 24, 1884. Inquiry held at Liverpool, October 10, 1884, before Raffles, Judge; Beasley and Davies, N.A. Casualty due to master navigating his vessel needlessly close to the shore during a dark night, and attempting to round Point Galera too hastily. Reprimanded.

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## Official Inquiries Abroad, 1884.

2306. *Valdivias*, s.s.; wrecked near Huacho, July 6, 1884. Inquiry held at Callao, July 29, 1884. Casualty due to negligent navigation on part of chief officer. His certificate as master cancelled; recommended for its return at end of eighteen months.

2308. *Olano*, barque; stranded and lost between Staten Island and the southernmost New Year's Island, June 3, 1884. Inquiry held at Valparaiso, August 1, 1884. Loss due to incorrectness of chronometer, and to the neglect of the lead.

2309. *Galatia*, s.s.; found to be leaking half an hour after leaving Tuticorin; was beached June 18, 1884, and became a total wreck. Inquiry held at Tuticorin, July 11, 1884. Vessel while

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getting under weigh probably scraped against some boulders and started a plate. Chief officer censured for the indifference which he displayed in the performance of his duties.

2310. *Rochester*, s.s.; stranded in Spring Bay, June 25th, 1884. Inquiry held at Buenos Ayres, August 12, 1884. Loss of vessel due to careless navigation on part of master and chief officer. Both their certificates suspended for three months.

2311. *Nebo*, s.s.; struck on Aliwal Shoal and subsequently foundered, May 20, 1884. Inquiry held at Durban, August 1, 1884. Vessel lost by default of master, who took no steps to ascertain his position, neglected the lead, and made no allowance for deviation of the compass. Certificate suspended for six months.

2313. *Dalswinton*, ship; destroyed by fire in port, June 29, 1884. Inquiry held at Pisagua, July 16, 1884. Origin of fire unknown, but Court recommended that illuminations and fireworks on completion of cargo should be prohibited on vessels that load nitrate of soda.

2314. *Aros Bay*, ship; abandoned at sea, June 28, 1884. Inquiry held at Valparaiso, August 11, 1884. Vessel partially dismasted in a hurricane, when steering gear also broke. Abandonment justifiable.

2315. *Ithuriel*, barque; stranded on Castle Island Reef, July 29, 1884. Inquiry held at New Providence, Bahamas, August 14, 1884. Casualty due to master making no allowance for current. Severely censured.

2316. *Bulwark*, barque; lost on voyage from Yokohama to Burrard's Inlet, with nineteen of her crew, about March 1, 1882. Inquiry held at Melbourne, July 7, 1884. Loss due to heavy weather, and vessel being improperly ballasted with mud, which choked her pumps.

2318. *Loch Tay*, s.s.; stranded on the Maugre Cay Reef, British Honduras, August 20, 1884. Inquiry held at Belize, August 28, 1884. Casualty due to master being unable to ascertain his position, and to the similarity of the lights in this neighbourhood.

2321. *City of Melbourne*, s.s.; stranded near No. 2 Frankland Island, July 5, 1884. Inquiry held at Brisbane, August 5, 1884. Stranding due to second mate giving wrong information as to



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vessel's position to first mate, who relieved him, and whose knowledge of the coast was much less than his own. Certificate suspended for three months. Master and first mate censured.

2322. *Vanguard*, and *Farningham*, barques; in collision off Tasmania, July 11, 1884, when the latter vessel sunk with three of her crew. Inquiry held at Brisbane, August 1, 1884. *Vanguard*, which was running free, to blame for collision. Light of *Farningham*, which vessel was fore-reaching on starboard-tack, should have been distinguished earlier.

2323. *John Fills*, barque; stranded about 20 miles north of Memory Rock, Bahamas, August 15, 1884. Inquiry held at New Providence, August 27, 1884. Loss of vessel due to careless navigation on part of master. Severely reprimanded only, as loss of vessel entailed loss upon himself, as part owner.

2324. *Caledonian*, s.s.; wrecked near Cape Frio, Brazil, August 12, 1884. Inquiry held at Rio, August 19, 1884. Master in default for going at full speed in a fog, making no allowance for current, and neglecting the lead. Certificate suspended for twelve months. First and second mates censured.

2326. *William Turner*, barque; stranded on Brill Bank, July 23, 1884. Inquiry held at Sourabaya, August 14, 1884. Stranding due to master being ignorant of the existence of a current, owing to want of sailing directions.

2329. *Alfred*, barque; abandoned, with cargo of coal on fire, August 1, 1884, when 68 days out on voyage from Liverpool to Valparaiso. Inquiry held at Coquimbo, August 29, 1884. Abandonment justifiable. Court also of opinion that the fire had been smouldering for some time at the bottom of the ship.

2281a. *Marlborough*, s.s.; stranded on a reef off Hainan Island, June 12, 1884. Inquiry held in the first instance at Hong Kong, July 15, 1884, when loss of vessel was attributed to the careless navigation of master, whose certificate was suspended for one year, with a recommendation for one as mate. Re-heard at Hong Kong, August 27, 1884. Loss of vessel due to master placing too much confidence in Chinese pilot. Certificate suspended for six months, recommended for one as mate.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. XII.

DECEMBER, 1884.

## ROYAL COMMISSION ON LOSS OF LIFE AT SEA.

THE order of reference to this Commission is as follows: "To inquire into the extent and cause of the loss of ships and lives at sea since the report of the Royal Commission on Unseaworthy Ships, and to report on the remedies for such losses, having special but not exclusive regard to the following subjects, viz.: the laws concerning marine insurance and the liability of shipowners; the functions and administration of the Marine Department of the Board of Trade; the functions of the Courts before whom wreck inquiries are conducted; the condition and efficiency of merchant officers and seamen, and the best means of improving the same."

The trusty and well-beloved noblemen and gentlemen appointed by Her Most Gracious Majesty to make the inquiry are the following:—The Rt. Hon. the Earl of Aberdeen, Chairman; H.R.H. The Duke of Edinburgh, K.G., &c., &c.; The Rt. Hon. Joseph Chamberlain, M.P., President of the Board of Trade; Sir Charles Parker Butt, Judge, Admiralty and Divorce; Thos. Charles Baring, Esq., M.P.; Thomas Burt, Esq., Working Man's Representative; John Eldon Gorst, Esq., Q.C., M.P.;



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Henry Green, Esq., Shipowner, London; Jas. Kennedy, Esq., Master Mariner; Jas. McGregor, Esq., Shipowner; William Pearce, Esq., Shipbuilder and Shipowner; Laurence Douglas Smith, Esq., Underwriter; Leonard Chas. Wakefield, Esq., Underwriter; William Walton, Esq., Solicitor; Robert Anderson, Esq., LL.D., of the Home Office, Secretary.

The Royal Commission on Unseaworthy Ships, which reported in 1874, was the outcome of the agitation set on foot by Mr. Samuel Plimsoll, then M.P. for Derby, and included amongst its members one shipowner in the person of Mr. George Duncan, of London, and a shipbuilder in the person of Mr. Peter Denny, of Dumbarton. The present Commission is not "an unseaworthy ships'" Commission, but "a loss of life" Commission, and it is to commence its labours with an inquiry into the loss of ships and lives at sea since the date of the report of the former Commissioners; a period which we assume to be from the beginning of 1875 down to the present time.

Many things have undergone alteration since 1875, and many ideas have been developed as regards the construction of such a Commission. Among other developments is the idea that each port and each class of ship according to the trade she is engaged in requires a separate and peculiar representative on such a Commission.

The candid reader on seeing the names of the members of the Commission as we have given them, would probably be struck with the fact that seamen as a body are not directly represented at all. The interests of labour are, it is true, provided for to a certain extent by the nomination of Mr. Burt, but this gentleman's special acquaintance with labour is confined to that branch of it which is carried on in coal mines, in which branch he has great knowledge, and amongst operatives he holds a deservedly high and trustworthy position, a fact which alone ought to make his presence a matter of satisfaction to seamen. He has done so well for one branch of labour that confidence is at once accorded to him when he strikes out into fresh fields and pastures new. Still, it is much to be regretted that seamen have no real representative. Until seamen find themselves able to combine for their common interest by a

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Trades' Union or otherwise, we fear they never will have a representative ready at all times to bring their cause into notice. It has always been to us a matter of regret that seamen are unable to look after their own interests as a class, because they have no combination like that existing in other branches of labour and trade. If they had been able to form a Union guided by trade regulations, we are satisfied that they as a body would be generally better off and more respectable. They would be in position to prevent loafers, gaol-birds, *et hoc genus omne* from palming themselves off as A.B.'s to the detriment of owners and the safety of life and property at sea, no less than to that of the respectable and competent seamen themselves. It is only because Mr. Burt appears on this Commission as the representative of labour that this absence of direct representation of seamen becomes of less importance at the present moment than it otherwise would have become. In making the above remarks, we do not wish to be understood to say or to imply that other members of the Commission are likely, in their broad views of the question, to overlook the special interests of seamen, for we are satisfied that the Duke of Edinburgh especially, and the other members generally, will not allow the influence of one interest to outweigh the consideration of any other; but what we do mean is that if there is one class beyond all others which, from the very nature of things, does need a special and technical representative, it is the seamen. Seeing, however, that they have no such direct representative, it becomes doubly incumbent on those members who may be said to represent the general public to see that full, very full consideration, and we would even go so far as to say indulgence, is accorded to any witnesses who may feel themselves sufficiently courageous to put the seamen's views and cause before the Royal Commissioners.

But, besides the fourteen gentlemen we have named as forming the Commission, there are to be six others. It appears that owners of cargo-carrying steamers think that the conditions under which they are owned, insured, managed, manned, loaded, navigated and, we may perhaps add, lost, are so extraordinary or unusual as to require special experts on the Commission to give them fair play. Representatives of the bench, the bar, the House of Lords, the



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House of Commons, the ordinary high-class shipowners, the underwriters, are not as a body regarded as sufficiently capable, or sufficiently informed, or sufficiently independent to weigh accurately and judge soundly and impartially, on evidence submitted to them, without the addition of some members versed in the art and mystery of managing cargo-carrying steamers. This being so, a resolution was passed at a meeting, purporting to be representative of this special line of business, that they would not give evidence before the body of gentlemen named in our list; they had no confidence in them.

The result, after much negotiation, has been that six more members are to be added, of whom four are to be nominated and elected by the owners of cargo-carrying steamers, and may be chosen from any class of persons; and two are to be selected by Mr. Chamberlain, with the limitation that the right hon. gentleman is *not* to appoint a Government official, or a shipowner, or underwriter. Mr. Chamberlain has to appoint two members in the interests of the public.

The perturbation of spirit displayed by some owners of vessels of the cargo-carrying type, on the publication of the fourteen names of the original Commission, has been phenomenal. It is not going beyond the mark to place it on record that it has been unprecedented. They seem to have arrived, somehow or other, at the conclusion that the Board of Trade was on its trial, because the President had found it his duty to call attention to the fact that there had been great loss of life at sea recently, and because he had, as they say, made a wrong use of statistics, and that the proper tribunal by which to try the Board of Trade is a strong combination of owners of the particular type of ship in which great loss of life has unfortunately happened.

Now we would venture to assert that the Board of Trade is not on its trial any more than the shipowners are on theirs. What is on trial is the sufficiency or non-efficiency of the law as it at present stands, and is administered to cope with facts as they exist. It would indeed be a sorry sight and would tend to render the Commission abortive, if the evidence of the witnesses is to be given on the principle that it is for or against the shipowners, or is for or

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against the Board of Trade. The evidence to be of value should be all one way, and we can only add, that one way is in the interest of truth.

One of the most absurd of many absurdities, which made itself evident during the somewhat heated controversy which followed the publication of the names given in our list, was the objection taken to Mr. Chamberlain's name. Some shipowners indeed were so bold as to "demand" that the right honourable gentleman's name should be instantly withdrawn, and this is what we cannot but regard as the outcome of the ridiculously mistaken notion that the Board of Trade was on its trial, and that the accusers were entitled to try it in the absence of its President. This demand was seen to be so unreasonable and ridiculous both in originality and absurdity, that shortly after its expression it was incontinently abandoned.

The fairest criticism we have seen on the subject of the Commission appeared in a contemporary newspaper, the argument in substance, if not in exact words, being as follows:—

In regard to this question of the formation of a Shipping Commission two things are clear. It is admitted that a Commission should, as far as is humanly possible, be an unbiassed body; but not less certain is it that Mr. Chamberlain, as the Minister of the Crown charged with the distinct duty of presiding over the interests of trade and commerce, had both an official and a moral right to be upon this particular Commission. The Commission was formed to assist *him*—not to try him or the shipowners either, but to seek evidence to enable just conclusions to be formed as to the means of minimising the risks of loss of life at sea. It was an essential part of Mr. Chamberlain's business both to form opinions and to act upon them. He already occupied a quasi-judicial position, as well as an administrative position, and had only acted according to his lights. To hold that on this account he should be ousted from the discharge of his office on the Commission was not only to impeach his fitness for his office as President of the Board of Trade, but to impeach his integrity as a public man. Yet this is what certain persons unfortunately did, and still more unfortunately did more than this. Whilst deprecating the presence

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of Mr. Chamberlain upon the Commission on the ground that he was a man who had already come to conclusions on the subject of this inquiry, they suggested that others who had done the same, but in an opposite sense, should be regarded as fit and proper persons to act as Commissioners. Had they contented themselves with questioning Mr. Chamberlain's fitness, we should at least have admitted that they were consistent, if not over-wise or prudent. But we utterly fail to discover the consistency of the course actually taken. The very objections they urged against Mr. Chamberlain, and which were at least over-ruled by Mr. Chamberlain's official position, may, in the very nature of things, have held good against themselves.

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## THE STATE OF THE NAVY AS REGARDS OUR MERCANTILE MARINE.

HERE can be little doubt that in the course of the next few years, large sums of money will have to be spent upon the Royal Navy. Circumstances have brought about a state of things in which, even allowing large deductions from what has been said by writers who may be disposed to make the worst of the situation, our naval supremacy is not in that assured condition which most Englishmen look upon as indispensable to the position of this country. It is settled that Englishmen will not submit to the blood tax, by which continental nations provide for their security against invasion, our army is consequently inconsiderable for our population, but we trust to our fleet. Our Navy ought then to be so superior to any probable combination of foreign powers, as to make us reasonably certain that no hostile army can be landed upon our shores. It may be that the present agitation on the subject was started, not altogether without an eye to party purposes, but it was very quickly lifted up from any such connection, as was, indeed, certain to be the case if it had any reason in it. It is a source of satisfaction to us that, at least, the efficiency of the Navy is not a party question, that all Englishmen are interested in it, and that all are prepared to pay for this first condition of our safety and position.

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It is not by any means the first time that the country has been thus rudely awakened; between thirty and forty years ago the Navy had to be re-constructed in consequence of the introduction of screw propulsion in naval warfare, and in 1860 it was found out that the new screw fleet built at so much expense was nearly useless in consequence of the invention of armour plates. We are not in nearly so bad a case now as on either of these occasions; it is not as yet at all conceded that any of our existing ships are in the face of new types as helpless as a wood line-of-battle ship opposed to an armoured gunboat. It is merely that our own Government has been going on spending just the same amount year by year upon the Navy, while other countries, notably France, have been increasing their expenditure, until we suddenly realise the fact that if something is not done we shall soon be unable to face a possible combination of European Navies against our own. The reasons for this state of things are to be found in the fact that France for some years went very much behind in the race, till having seriously to determine whether she would be in the future a great naval power or no, she, having chosen the former alternative, set herself steadily to work, and has now a fine ironclad fleet. On the last occasion when France was as near to us in the matter as now, when in fact she was very much nearer, it was because she built rapidly a number of ironclads of a type now obsolete. These were wooden ships armour-plated; we had also several of the same type, but they were soon seen to be of so perishable a nature that our own Admiralty ceased to build them, and most of them are now broken up or are put on one side as useless. The French retained vessels of this class on the active list much longer than we, in fact, a few years ago there was a considerable number of French ironclads still counted as efficient which were utterly worthless. Of late years, however, our neighbours have been seriously at work re-constructing their fleet, and now it is said they are again, in point of efficiency as well as of numbers, within measurable distance of ourselves. Germany also has been spending money of late years largely upon her fleet, and Italy has, ever since her unification, striven to have such armaments upon the sea as should entitle her to consideration as a first-rate naval power. Russia, after having

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EXAMPLES.

| | |
|---|---|
| Number of Decks ... | |
| Number of Masts ... | |
| Rigged ... ... ... | *Spritsail.* |
| Stern ... ... ... | |
| Build ... ... ... | |
| Galleries ... ... ... | |
| Head ... ... ... | |
| Framework and description of vessel ... ... | *Wood. Barge, sailing.* |
| Number of bulkheads ... | |
| Number of water ballast tanks, and their capacity in tons ... ... | |

| | |
|---|---|
| Number of Decks ... | |
| Number of Masts ... | *Nil.* |
| Rigged ... ... ... | *Not.* |
| Stern ... ... ... | |
| Build ... ... ... | |
| Galleries ... ... ... | |
| Head ... ... ... | |
| Framework and description of vessel ... ... | *Wood. Dumb Barge* or "*Canal Boat*" or "*Lighter*," &c., &c., &c., as the case may be. |
| Number of bulkheads ... | |
| Number of water ballast tanks, and their capacity in tons ... ... | |

T. H. FARRER, Secretary.

THOMAS GRAY, Assistant-Secretary.

Board of Trade, Marine Department, September, 1884.

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OFFICIAL RETURN OF BRITISH WRECKS IN SEPTEMBER, 1884.—The number and tonnage of British vessels, respecting whose loss reports were received at the Board of Trade during the month of September, 1884, and the number of lives lost are as follow:—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing..... | 56 ..... | 11,146 ..... | 42 |
| Steam ..... | 17 ..... | 8,439 ..... | 2 |
| Total ..... | 73 ..... | 19,585 ..... | 44 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in September relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—THOMAS GRAY, Assistant-Secretary, Marine Department.—Board of Trade, 1st October, 1884.

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TRADE MARKS IN RUSSIA.—The Russian Customs Department have issued an Order, dated 3rd September, 1884, that goods bearing Trade Marks with effigies of the Holy Virgin, Saint George, or other Saints, will not be admitted into the Russian Empire.

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THE Board of Trade have awarded a Binocular Glass to Captain B. Rehberg, master of the German barque, *Vandenbergh*, of Rostock, in acknowledgment of his humanity and kindness to the ship-wrecked crew of the ship, *Aros Bay*, of Glasgow, whom he received on board his vessel when they abandoned their ship off Cape Horn, on the 28th June last, and conveyed to Valparaiso.

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HER MAJESTY THE QUEEN has been graciously pleased to confer the Albert Medal of the Second Class on William Macgregor, Esq., M.D., C.M.G., Chief Medical Officer and Receiver-General, Fiji. The following is an account of the services in respect of which the decoration has been conferred:—The *Syria*, bound from Calcutta to the Fiji Islands, with 494 Coolie emigrants, stranded on the evening of Sunday, 11th May last, upon the Nasalai Reef, some 25 miles to the eastward of Suva, Fiji. This reef is exposed to the full force of the south-east trade winds, which, at the time of the wreck, were blowing with great force; also to the long roll of the sea from the vast expanse of the South Pacific. Owing to the peculiar set of the tides over the reef, the shipwrecked emigrants who committed themselves to the water in hopes of swimming ashore were irresistibly carried in an opposite direction, and swept out into the surf, which was breaking thirty feet high over the edge of the reef. The captain did not leave the wreck until he believed that all the people were out of it. He then started from the after-part of the ship, bringing an Indian woman —who was half drunk—along with him, and was conducting her across a piece of broken mast which lay at a slight incline across the gap that existed between the two portions of the hull, when both were knocked over and over towards the perpendicular edge of the reef, the woman grasping the captain by the neck like a vice. An official who was at hand, at the risk of his own life, dashed

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into the breakers to their rescue, but no sooner had he reached the drowning couple, than he, too, was thrown down, and all three were being rolled along to destruction when Dr. MacGregor, who was at the time standing by the wreck of the fallen mainmast, leading and directing the removal of the struggling Indians, instantly seized a line forming part of the ship's running rigging, that was floating by, and taking two or three turns with it round his wrist, plunged into the surf at the imminent risk of his own life, grasped the struggling bodies of the drifting people, and by main strength dragged them back into shallow water from the destruction which appeared to be inevitable. It is also stated that, but for the energetic, able, and cool way in which Dr. MacGregor led the relieving party, the loss of life, which was great—59 in all—must have been appalling.

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THE Board of Trade have awarded their Silver Medal for gallantry to Mr. John Fowler, Acting Superintendent of Police, and their Bronze Medal for gallantry to Emosi, a native of Fiji; Ratu Joshua, native Sub-Inspector of Police, Constable Apraim, and Police Corporal Swani, for their gallant services in saving life at the wreck of the coolie emigrant ship *Syria*, on the Nasalai reef, Viti Levu, Fiji, on the night of the 11th May last.

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THE Board of Trade have awarded a binocular glass to Captain P. H. Simonsen, of the German barque *Moctezuma*, in acknowledgment of his humanity and kindness to a portion of the shipwrecked crew of the *Mignonette*, abandoned at sea on the 5th July, 1884.

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### OFFICIAL INQUIRIES AT HOME, 1884.

2307. *Lena*, s.s., and *Shipwash*, light-vessel; former built at Sunderland, 1865; owned by Mr. Charles Norwood and others; tonnage, 679; Cronstadt to London; general cargo; in collision. July 19, 1884. Inquiry held at Greenwich, September 11, 1884, before Balguy, Judge; Ronaldson and Beasly, N.A. Master of

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*Lena* in default for not making sufficient allowance for the tide, and setting a course which would bring his ship in dangerous proximity to the light-ship. Certificate suspended for three months. Recommended for one as mate.

2312. *Jane Clark*, s.s.; built at Belfast, 1883; owned by Mr. Robert Clark, and others; tonnage, 532; West Coast of Africa to Bordeaux; ground nuts and two passengers; stranded near Point de Galla, Africa, June 9, 1884. Inquiry held at Glasgow, September 24, 1884, before Scott and Mitchell, Justices; Hight and Ward, N.A. Casualty due to an error in calculating the distance from the land.

2317. *Susan Hendry*, brigantine, and *Vigilant*, steam fish carrier; former built at Perth, 1880; owned by Mr. E. Kemp, and others; tonnage, 128; Ramsgate to Sunderland; ballast; latter built at Port Glasgow, 1880; owned by Great Northern Steam Fishing Company, Limited; tonnage, 95; London for North Sea Fishing Fleet; empty fish boxes and ice; in collision about eleven miles from Shipwash Light-ship, August 8, 1884, when former vessel sunk. Inquiry held at Hull, September 29, 1884, before Twiss, Judge; Anderson and French, N.A. Collision due to *Vigilant* not complying with the Rule of the Road. Master in default for not having a proper look-out, or an officer in charge of the watch. Certificate not dealt with.

2319. *Woodside*, s.s.; built at Sunderland, 1882, owned by Mr. T. G. Greenwell and others, tonnage, 1,140; Cette to Baltimore; ballast; stranded and lost on Cabo de Creux, August 12, 1884. Inquiry held at Sunderland, October 3, 1884, before Booth and Horan, Justices; Curling and Kennedy, N.A. Stranding due to courses set not being made good, and to master neglecting the lead. Cautioned.

2320. *Margaret Kendall*, schooner; Runcorn to Wick; salt; lost with all hands on Proudfoot Rocks, Wick Bay, August 23, 1884. Inquiry held at Wick, September 26, 1884, before Harper and Bruce, Justices; Parfitt, Hyde and Kiddle, N.A. Loss due to person in charge attempting to leave Wick Bay at night, with a light wind and strong tide, in order to obtain a better anchorage, the harbour being full.



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2325. *Carrie*, s.s.; built at Middlesborough, 1884; owned by Mr. J. M. Lennard and others; tonnage, 928; Alexandria to Antwerp; wheat; struck Pearl Rock, near Gibraltar, and foundered, September 3, 1884. Inquiry held at Sunderland, October 4, 1884, before Booth and Horan, Justices; Curling and Kennedy, N.A. Loss of vessel due to improper navigation on part of master. Certificate suspended for six months.

2327. *Acuba*, s.s.; built at Sunderland, 1883; owned by Mr. Thomas Stockdale and others; tonnage, 1,194; Perth Amboy, U.S.A., to Miramichi; ballast; stranded near Friar Rocks, off Ship Harbour, N.S., June 9, 1884. Inquiry held at Sunderland, October 7, 1884, before Booth and Horan, Justices; Castle and Vaux, N.A. Stranding due to courses set not having been made good, and to master neglecting the lead. Admonished to be more careful in future.

2328. *Bengeo*, s.s.; built at Whitehaven, 1882; owned by Steamship Bengeo Company (Limited); tonnage, 774; Demerara to Puerto Cabello, Venezuela; ballast; stranded near Point Galera, Trinidad, August 24, 1884. Inquiry held at Liverpool, October 10, 1884, before Raffles, Judge; Beasley and Davies, N.A. Casualty due to master navigating his vessel needlessly close to the shore during a dark night, and attempting to round Point Galera too hastily. Reprimanded.

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## Official Inquiries Abroad, 1884.

2306. *Valdivias*, s.s.; wrecked near Huacho, July 6, 1884. Inquiry held at Callao, July 29, 1884. Casualty due to negligent navigation on part of chief officer. His certificate as master cancelled; recommended for its return at end of eighteen months.

2308. *Olano*, barque; stranded and lost between Staten Island and the southernmost New Year's Island, June 3, 1884. Inquiry held at Valparaiso, August 1, 1884. Loss due to incorrectness of chronometer, and to the neglect of the lead.

2309. *Galatia*, s.s.; found to be leaking half an hour after leaving Tuticorin; was beached June 18, 1884, and became a total wreck. Inquiry held at Tuticorin, July 11, 1884. Vessel while

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getting under weigh probably scraped against some boulders and started a plate. Chief officer censured for the indifference which he displayed in the performance of his duties.

2310. *Rochester*, s.s.; stranded in Spring Bay, June 25th, 1884. Inquiry held at Buenos Ayres, August 12, 1884. Loss of vessel due to careless navigation on part of master and chief officer. Both their certificates suspended for three months.

2311. *Nebo*, s.s.; struck on Aliwal Shoal and subsequently foundered, May 20, 1884. Inquiry held at Durban, August 1, 1884. Vessel lost by default of master, who took no steps to ascertain his position, neglected the lead, and made no allowance for deviation of the compass. Certificate suspended for six months.

2313. *Dalswinton*, ship; destroyed by fire in port, June 29, 1884. Inquiry held at Pisagua, July 16, 1884. Origin of fire unknown, but Court recommended that illuminations and fireworks on completion of cargo should be prohibited on vessels that load nitrate of soda.

2314. *Aros Bay*, ship; abandoned at sea, June 28, 1884. Inquiry held at Valparaiso, August 11, 1884. Vessel partially dismasted in a hurricane, when steering gear also broke. Abandonment justifiable.

2315. *Ithuriel*, barque; stranded on Castle Island Reef, July 29, 1884. Inquiry held at New Providence, Bahamas, August 14, 1884. Casualty due to master making no allowance for current. Severely censured.

2316. *Bulwark*, barque; lost on voyage from Yokohama to Burrard's Inlet, with nineteen of her crew, about March 1, 1882. Inquiry held at Melbourne, July 7, 1884. Loss due to heavy weather, and vessel being improperly ballasted with mud, which choked her pumps.

2318. *Loch Tay*, s.s.; stranded on the Maugre Cay Reef, British Honduras, August 20, 1884. Inquiry held at Belize, August 28, 1884. Casualty due to master being unable to ascertain his position, and to the similarity of the lights in this neighbourhood.

2321. *City of Melbourne*, s.s.; stranded near No. 2 Frankland Island, July 5, 1884. Inquiry held at Brisbane, August 5, 1884. Stranding due to second mate giving wrong information as to



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vessel's position to first mate, who relieved him, and whose knowledge of the coast was much less than his own. Certificate suspended for three months. Master and first mate censured.

2322. *Vanguard*, and *Farningham*, barques; in collision off Tasmania, July 11, 1884, when the latter vessel sunk with three of her crew. Inquiry held at Brisbane, August 1, 1884. *Vanguard*, which was running free, to blame for collision. Light of *Farningham*, which vessel was fore-reaching on starboard-tack, should have been distinguished earlier.

2323. *John Fills*, barque; stranded about 20 miles north of Memory Rock, Bahamas, August 15, 1884. Inquiry held at New Providence, August 27, 1884. Loss of vessel due to careless navigation on part of master. Severely reprimanded only, as loss of vessel entailed loss upon himself, as part owner.

2324. *Caledonian*, s.s.; wrecked near Cape Frio, Brazil, August 12, 1884. Inquiry held at Rio, August 19, 1884. Master in default for going at full speed in a fog, making no allowance for current, and neglecting the lead. Certificate suspended for twelve months. First and second mates censured.

2326. *William Turner*, barque; stranded on Brill Bank, July 23, 1884. Inquiry held at Sourabaya, August 14, 1884. Stranding due to master being ignorant of the existence of a current, owing to want of sailing directions.

2329. *Alfred*, barque; abandoned, with cargo of coal on fire, August 1, 1884, when 68 days out on voyage from Liverpool to Valparaiso. Inquiry held at Coquimbo, August 29, 1884. Abandonment justifiable. Court also of opinion that the fire had been smouldering for some time at the bottom of the ship.

2281a. *Marlborough*, s.s.; stranded on a reef off Hainan Island, June 12, 1884. Inquiry held in the first instance at Hong Kong, July 15, 1884, when loss of vessel was attributed to the careless navigation of master, whose certificate was suspended for one year, with a recommendation for one as mate. Re-heard at Hong Kong, August 27, 1884. Loss of vessel due to master placing too much confidence in Chinese pilot. Certificate suspended for six months, recommended for one as mate.

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THE

# NAUTICAL MAGAZINE

*FIFTY-THIRD YEAR.*

VOLUME LIII.—No. XII.

DECEMBER, 1884.

## ROYAL COMMISSION ON LOSS OF LIFE AT SEA.

THE order of reference to this Commission is as follows: "To inquire into the extent and cause of the loss of ships and lives at sea since the report of the Royal Commission on Unseaworthy Ships, and to report on the remedies for such losses, having special but not exclusive regard to the following subjects, viz.: the laws concerning marine insurance and the liability of shipowners; the functions and administration of the Marine Department of the Board of Trade; the functions of the Courts before whom wreck inquiries are conducted; the condition and efficiency of merchant officers and seamen, and the best means of improving the same."

The trusty and well-beloved noblemen and gentlemen appointed by Her Most Gracious Majesty to make the inquiry are the following:—The Rt. Hon. the Earl of Aberdeen, Chairman; H.R.H. The Duke of Edinburgh, K.G., &c., &c.; The Rt. Hon. Joseph Chamberlain, M.P., President of the Board of Trade; Sir Charles Parker Butt, Judge, Admiralty and Divorce; Thos. Charles Baring, Esq., M.P.; Thomas Burt, Esq., Working Man's Representative; John Eldon Gorst, Esq., Q.C., M.P.;



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Henry Green, Esq., Shipowner, London; Jas. Kennedy, Esq., Master Mariner; Jas. McGregor, Esq., Shipowner; William Pearce, Esq., Shipbuilder and Shipowner; Laurence Douglas Smith, Esq., Underwriter; Leonard Chas. Wakefield, Esq., Underwriter; William Walton, Esq., Solicitor; Robert Anderson, Esq., LL.D., of the Home Office, Secretary.

The Royal Commission on Unseaworthy Ships, which reported in 1874, was the outcome of the agitation set on foot by Mr. Samuel Plimsoll, then M.P. for Derby, and included amongst its members one shipowner in the person of Mr. George Duncan, of London, and a shipbuilder in the person of Mr. Peter Denny, of Dumbarton. The present Commission is not "an unseaworthy ships'" Commission, but "a loss of life" Commission, and it is to commence its labours with an inquiry into the loss of ships and lives at sea since the date of the report of the former Commissioners; a period which we assume to be from the beginning of 1875 down to the present time.

Many things have undergone alteration since 1875, and many ideas have been developed as regards the construction of such a Commission. Among other developments is the idea that each port and each class of ship according to the trade she is engaged in requires a separate and peculiar representative on such a Commission.

The candid reader on seeing the names of the members of the Commission as we have given them, would probably be struck with the fact that seamen as a body are not directly represented at all. The interests of labour are, it is true, provided for to a certain extent by the nomination of Mr. Burt, but this gentleman's special acquaintance with labour is confined to that branch of it which is carried on in coal mines, in which branch he has great knowledge, and amongst operatives he holds a deservedly high and trustworthy position, a fact which alone ought to make his presence a matter of satisfaction to seamen. He has done so well for one branch of labour that confidence is at once accorded to him when he strikes out into fresh fields and pastures new. Still, it is much to be regretted that seamen have no real representative. Until seamen find themselves able to combine for their common interest by a

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Trades' Union or otherwise, we fear they never will have a representative ready at all times to bring their cause into notice. It has always been to us a matter of regret that seamen are unable to look after their own interests as a class, because they have no combination like that existing in other branches of labour and trade. If they had been able to form a Union guided by trade regulations, we are satisfied that they as a body would be generally better off and more respectable. They would be in position to prevent loafers, gaol-birds, *et hoc genus omne* from palming themselves off as A.B.'s to the detriment of owners and the safety of life and property at sea, no less than to that of the respectable and competent seamen themselves. It is only because Mr. Burt appears on this Commission as the representative of labour that this absence of direct representation of seamen becomes of less importance at the present moment than it otherwise would have become. In making the above remarks, we do not wish to be understood to say or to imply that other members of the Commission are likely, in their broad views of the question, to overlook the special interests of seamen, for we are satisfied that the Duke of Edinburgh especially, and the other members generally, will not allow the influence of one interest to outweigh the consideration of any other; but what we do mean is that if there is one class beyond all others which, from the very nature of things, does need a special and technical representative, it is the seamen. Seeing, however, that they have no such direct representative, it becomes doubly incumbent on those members who may be said to represent the general public to see that full, very full consideration, and we would even go so far as to say indulgence, is accorded to any witnesses who may feel themselves sufficiently courageous to put the seamen's views and cause before the Royal Commissioners.

But, besides the fourteen gentlemen we have named as forming the Commission, there are to be six others. It appears that owners of cargo-carrying steamers think that the conditions under which they are owned, insured, managed, manned, loaded, navigated and, we may perhaps add, lost, are so extraordinary or unusual as to require special experts on the Commission to give them fair play. Representatives of the bench, the bar, the House of Lords, the



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House of Commons, the ordinary high-class shipowners, the underwriters, are not as a body regarded as sufficiently capable, or sufficiently informed, or sufficiently independent to weigh accurately and judge soundly and impartially, on evidence submitted to them, without the addition of some members versed in the art and mystery of managing cargo-carrying steamers. This being so, a resolution was passed at a meeting, purporting to be representative of this special line of business, that they would not give evidence before the body of gentlemen named in our list; they had no confidence in them.

The result, after much negotiation, has been that six more members are to be added, of whom four are to be nominated and elected by the owners of cargo-carrying steamers, and may be chosen from any class of persons; and two are to be selected by Mr. Chamberlain, with the limitation that the right hon. gentleman is *not* to appoint a Government official, or a shipowner, or underwriter. Mr. Chamberlain has to appoint two members in the interests of the public.

The perturbation of spirit displayed by some owners of vessels of the cargo-carrying type, on the publication of the fourteen names of the original Commission, has been phenomenal. It is not going beyond the mark to place it on record that it has been unprecedented. They seem to have arrived, somehow or other, at the conclusion that the Board of Trade was on its trial, because the President had found it his duty to call attention to the fact that there had been great loss of life at sea recently, and because he had, as they say, made a wrong use of statistics, and that the proper tribunal by which to try the Board of Trade is a strong combination of owners of the particular type of ship in which great loss of life has unfortunately happened.

Now we would venture to assert that the Board of Trade is not on its trial any more than the shipowners are on theirs. What is on trial is the sufficiency or non-efficiency of the law as it at present stands, and is administered to cope with facts as they exist. It would indeed be a sorry sight and would tend to render the Commission abortive, if the evidence of the witnesses is to be given on the principle that it is for or against the shipowners, or is for or

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against the Board of Trade. The evidence to be of value should be all one way, and we can only add, that one way is in the interest of truth.

One of the most absurd of many absurdities, which made itself evident during the somewhat heated controversy which followed the publication of the names given in our list, was the objection taken to Mr. Chamberlain's name. Some shipowners indeed were so bold as to "demand" that the right honourable gentleman's name should be instantly withdrawn, and this is what we cannot but regard as the outcome of the ridiculously mistaken notion that the Board of Trade was on its trial, and that the accusers were entitled to try it in the absence of its President. This demand was seen to be so unreasonable and ridiculous both in originality and absurdity, that shortly after its expression it was incontinently abandoned.

The fairest criticism we have seen on the subject of the Commission appeared in a contemporary newspaper, the argument in substance, if not in exact words, being as follows:—

In regard to this question of the formation of a Shipping Commission two things are clear. It is admitted that a Commission should, as far as is humanly possible, be an unbiassed body; but not less certain is it that Mr. Chamberlain, as the Minister of the Crown charged with the distinct duty of presiding over the interests of trade and commerce, had both an official and a moral right to be upon this particular Commission. The Commission was formed to assist *him*—not to try him or the shipowners either, but to seek evidence to enable just conclusions to be formed as to the means of minimising the risks of loss of life at sea. It was an essential part of Mr. Chamberlain's business both to form opinions and to act upon them. He already occupied a quasi-judicial position, as well as an administrative position, and had only acted according to his lights. To hold that on this account he should be ousted from the discharge of his office on the Commission was not only to impeach his fitness for his office as President of the Board of Trade, but to impeach his integrity as a public man. Yet this is what certain persons unfortunately did, and still more unfortunately did more than this. Whilst deprecating the presence

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of Mr. Chamberlain upon the Commission on the ground that he was a man who had already come to conclusions on the subject of this inquiry, they suggested that others who had done the same, but in an opposite sense, should be regarded as fit and proper persons to act as Commissioners. Had they contented themselves with questioning Mr. Chamberlain's fitness, we should at least have admitted that they were consistent, if not over-wise or prudent. But we utterly fail to discover the consistency of the course actually taken. The very objections they urged against Mr. Chamberlain, and which were at least over-ruled by Mr. Chamberlain's official position, may, in the very nature of things, have held good against themselves.

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## THE STATE OF THE NAVY AS REGARDS OUR MERCANTILE MARINE.

THERE can be little doubt that in the course of the next few years, large sums of money will have to be spent upon the Royal Navy. Circumstances have brought about a state of things in which, even allowing large deductions from what has been said by writers who may be disposed to make the worst of the situation, our naval supremacy is not in that assured condition which most Englishmen look upon as indispensable to the position of this country. It is settled that Englishmen will not submit to the blood tax, by which continental nations provide for their security against invasion, our army is consequently inconsiderable for our population, but we trust to our fleet. Our Navy ought then to be so superior to any probable combination of foreign powers, as to make us reasonably certain that no hostile army can be landed upon our shores. It may be that the present agitation on the subject was started, not altogether without an eye to party purposes, but it was very quickly lifted up from any such connection, as was, indeed, certain to be the case if it had any reason in it. It is a source of satisfaction to us that, at least, the efficiency of the Navy is not a party question, that all Englishmen are interested in it, and that all are prepared to pay for this first condition of our safety and position.

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It is not by any means the first time that the country has been thus rudely awakened; between thirty and forty years ago the Navy had to be re-constructed in consequence of the introduction of screw propulsion in naval warfare, and in 1860 it was found out that the new screw fleet built at so much expense was nearly useless in consequence of the invention of armour plates. We are not in nearly so bad a case now as on either of these occasions; it is not as yet at all conceded that any of our existing ships are in the face of new types as helpless as a wood line-of-battle ship opposed to an armoured gunboat. It is merely that our own Government has been going on spending just the same amount year by year upon the Navy, while other countries, notably France, have been increasing their expenditure, until we suddenly realise the fact that if something is not done we shall soon be unable to face a possible combination of European Navies against our own. The reasons for this state of things are to be found in the fact that France for some years went very much behind in the race, till having seriously to determine whether she would be in the future a great naval power or no, she, having chosen the former alternative, set herself steadily to work, and has now a fine ironclad fleet. On the last occasion when France was as near to us in the matter as now, when in fact she was very much nearer, it was because she built rapidly a number of ironclads of a type now obsolete. These were wooden ships armour-plated; we had also several of the same type, but they were soon seen to be of so perishable a nature that our own Admiralty ceased to build them, and most of them are now broken up or are put on one side as useless. The French retained vessels of this class on the active list much longer than we, in fact, a few years ago there was a considerable number of French ironclads still counted as efficient which were utterly worthless. Of late years, however, our neighbours have been seriously at work re-constructing their fleet, and now it is said they are again, in point of efficiency as well as of numbers, within measurable distance of ourselves. Germany also has been spending money of late years largely upon her fleet, and Italy has, ever since her unification, striven to have such armaments upon the sea as should entitle her to consideration as a first-rate naval power. Russia, after having

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wasted large sums of money upon Popoffkas, circular ironclads which might be valuable simply as movable forts but not as vessels capable of manœuvring in action, is now building real ironclad ships, and even South American and Asiatic powers are acquiring war ships whose existence in all parts of the world appears to necessitate an increase in our own naval strength at remote stations.

Concurrently with the agitation for a large increase to the strength of the Navy, the necessity for which appears to be practically admitted on all sides, there has arisen a lively discussion as to what form the increase should take. It is said, on the one hand, that the ironclad is no longer invulnerable against the shell fire of the newest type of ordnance, that she is as defenceless against the torpedo or ram as is the unarmoured ship, and that the latter is so much cheaper, that our money would be far better spent on cruisers, five of which could be built for the cost of one first-rate ironclad. On the other hand, it is argued that the limit of armour thickness is by no means certainly reached, it being remembered that our ironclads of the largest size now are very little larger than the *Minotaur* of twenty years ago; whereas the latter had armour five-and-a-half inches thick, and the *Inflexible* has armour two feet thick. Further, a very fallacious view of the respective efficiency of gun and armour is obtained by considering only the result of experiments such as those conducted at Shoeburyness and Spezzia, since, in actual warfare, the gun would be at a much greater disadvantage, being upon a moving platform, and fired at a shifting target. It must also be remembered that the principle of water-tight compartments is now, in all ships, so thoroughly carried out in detail, and the management of them is so well understood that disasters such as those of the *Grosser Kurfurst* and the *Vanguard* are not likely to occur again. There is further, the argument, and to our thinking it is a cogent one, that other naval powers continue to build first-rate ironclads, and we can hardly expect our seamen to go to meet the enemy unless they are as well protected as he is. In fact until there is such a general agreement in the superiority of marine artillery to armour plates, that other nations begin to give up armour, we cannot venture

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upon such a course. England should indeed be the last nation to shrink from a contest, where money is really the chief question at issue; if France and Germany can see their way to spending millions upon their fleet, surely we, who only have a fleet to depend upon, cannot hang back. If they have ironclads so must we, but if cruisers are equally necessary, and torpedo boats, we must have these too.

Having thus remarked upon the general question of the security of the country against foreign invasion, we come to the main purpose of this paper, which is to consider the bearing of the subject upon the Mercantile Marine. Our large and growing merchant navy is at the same time our most vulnerable point of attack, and also a most valuable means of defence; but it must be remembered that in both respects the condition of things is altogether different to anything in the past history of the country. Our dependence upon foreign food supplies makes it a matter of vital importance that our commerce should be defended at all hazards. It might be that even if our own steamers were unable to traverse the ocean in safety, neutral ships would bring us corn; but such a state of things would involve very high freights, so high, indeed, as to put wheat up to famine prices. It has been said by eminent naval authorities that our commerce could not be carried on under convoy as in olden times; this we should be somewhat disposed to doubt, for it would be surely possible for steamers to keep together in an ocean voyage better than the sailing ships of the old time; and if the enemy's cruisers were fast and active, so would be the war-ships charged with convoy duties. Obviously, however, if commerce had to be carried on under protection, very little comparatively could be done. It appears certain that if the enemy were able to keep the sea, all our sailing ships would have to be laid up, and most of the cargo steamers too slow to run from an enemy, would soon follow their example or else be transferred to neutral flags. The only conditions under which commerce could be profitably carried on in the event of war would be by our being able to shut up the enemy in port, maintain an efficient blockade, and be able to despatch fast cruisers to catch any of his fast craft which should escape the blockade. Such a course of action would imply undoubted naval superiority on

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our part, as complete as that which the French fleet had in the war of 1870, and which it kept throughout in spite of all the German victories on land. To ensure such a condition of things it is necessary that we should be superior to any probable enemy, not merely in any one branch of our Navy, but in every department. We could not maintain any blockade at all unless we had ironclads able to meet his ironclads when they put to sea, unless we had fast cruisers which could keep up with his fastest, and unless we had torpedo boats to oppose to his torpedo boats. Short of this our Mercantile Marine could not carry on its ordinary trade, and the only thing left would be for our ships to be transferred to foreign flags.

The three classes into which war ships are usually divided are, as we have said, ironclads, unarmoured cruisers, and torpedo boats. In considering the requirements of our Navy at present, as compared with its actual condition, it will no doubt be found that it requires augmenting in every division, and the important question will have to be considered what to do first. Fortunately, for some reasons, the awakening as to the need of increased naval expenditure comes at a time when private shipbuilders would be especially glad of opportunities to compete for Government work. The depression in the private shipbuilding trade is probably as great as was ever known, when compared with the condition of things during the last period of prosperity. It is treading on dangerous ground to advocate that the Admiralty should give out contracts in order to find employment for the unemployed, nor do we think that in the present day anything of the sort would be seriously contemplated by any responsible authority. It is, however, another thing altogether when a special need for augmentation of the Navy is acknowledged, to enter into contracts in a state of the market when good contracts can be made. There is also the further consideration that the existence of large shipbuilding yards, with valuable plant and an efficient staff available for building and repairing war ships, is in itself a valuable addition to our means of carrying on a naval war, and if, by judicious timing of expenditure, ships of war can be built in these establishments at times when there is little demand for vessels of other kinds, the country

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at large gains quite as much by the arrangement as do either the employers or the workmen. Of the three classes of vessels of which we have spoken, by a long way the slowest in building are ironclads, and therefore it would seem that if there is anything like an equal deficiency in the three classes, we should begin making up for lost time by building them. It is, however, the case that several ironclads are now under construction in the Royal dockyards, and it has been urged with good reason that the building of these should be pushed on, and any new ones laid down should be in private shipbuilding yards. It is also undoubtedly necessary that an increase should be made in the numbers of our less costly craft, such as unarmoured cruisers and torpedo boats, but connected with the question of extensive outlay upon them are considerations in regard to the extent to which vessels for these services could be improvised in the event of an emergency.

For some years past valuable work has been done by the Admiralty in the direction of ascertaining the extent of the reserve which might be found in the Mercantile Marine, and also in inducing owners of merchant ships to introduce such small changes into their construction as would improve their capability for war ships without at the same time impairing their value as cargo or passenger vessels. This list has been gradually increasing and about three hundred vessels are now on it, of which, however, only one-third are vessels of fourteen knots and upwards, the remainder being of twelve to fourteen knots. The former, of course, would be the vessels which would be relied on for conversion into cruisers in the event of war. Much has been written upon the relative efficiency of the fast merchant steamer improvised as a cruiser, and the war-vessels unarmoured, but built for fighting purposes. It has indeed been remarked that it is useless to think of relying upon merchant steamers in the event of war, seeing that all our fast steamers will then be especially in request to bring us food supplies. Even if that were the case, the Admiralty List will have been of use, because in such cases it will be a great advantage if the steamers can defend themselves against enemies they may meet in mid-ocean. It appears to us, however, that the value of the merchant steamer will be just

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in proportion to the need for her. If the enemy is able to improvise cruisers we shall probably find it necessary to send fast improvised cruisers in pursuit of them. But let us see what would be the chances of success of a merchant steamer, say one of the newest Atlantic liners as against the unarmoured war-ship. Of the latter class, a vessel which has been much referred to of late is the *Esmeralda*, built for the Chilian Government by Sir W. Armstrong & Co., of the Tyne. The *Esmeralda* is 270 feet in length, 42 feet beam, and 18½ feet load draught, is built of steel, and had an indicated horse-power of 6,000, and steamed 18½ knots on trial. Her boilers and engines are all well below the water-line, her steering-gear is also similarly protected, and the man at the wheel, the officer in command, as well as the men at the guns are placed within shields of thin steel, proof against rifle bullets and also against small shot from machine guns. She is armed with two 25-ton guns, one at the bow and one at the stern, also six 4-ton guns and a number of machine guns and small artillery of various types. Further, she has a steel deck one inch thick, which is five feet below water at the sides, but is rounded up to the extent of four feet at the middle line. This, it is supposed, will afford considerable protection against shot and shell from all but very heavy artillery. She is further protected by what is called coal armour; that is, wing bunkers in the neighbourhood of the water-line. As compared with such a vessel, built as we have said for war purposes, the ordinary Atlantic liner would necessarily be under many disadvantages even when as much as possible had been done to fit her for a war-ship. She might be disabled by a well-directed shot striking the stern frame, whereas in the cruiser the counter is dropped so far as to place the rudder and its connections with the ship well below water. The engines of the liner would also be partly above water, although, in the more recent vessels, on account of the great beam, there are large side bunkers affording protection. The war cruiser has also the advantage in being much more extensively divided into compartments than are the merchant vessels; but also, in this respect, the newest liners are much superior to former vessels of their class. The cruiser, being shorter and having twin

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screws, is also handier than the merchant steamer. Further, it would require much additional work to enable a merchant vessel to fight the largest guns, although, with very little alteration indeed, she might manage those of moderate calibre. In point of speed, the merchant vessel might or might not have the advantage. We believe the *Esmeralda's* speed on trial has not been appreciably exceeded by any sea-going war ship afloat; it has, however, been surpassed by more than one merchant steamer. It remains to be said that in one most important condition the merchant steamer would usually have the advantage over any vessels yet built for war service. The *Esmeralda* carries 600 tons of coal, which is variously described as sufficient to enable her to steam 6,000 knots at the rate of 10 knots per hour, or about 8,000 knots at a speed of 8 knots; or, again, less than three days' steaming at full speed. This, practically means that she cannot use her full speed except an enemy is in sight, unless she risks being short of coal during action. It must, we think, be considered that coal armour, if it is really to be relied on as armour, should only be reserve coal, to be used only in running for a port to refit after an action, and this consideration, coupled with the comparatively small total weight of coal carried, tells materially against the cruiser in the comparison, especially when it is remembered that the fast liner carries coal sufficient to steam across the Atlantic at full speed as well as a considerable cargo. It is no extravagant estimate to say that the latter vessel might take in her guns, ammunition, sufficient coal armour to protect her engines and boilers, and even then be able to carry bunker coal enough to take her across the ocean at full speed. On the whole, we have no doubt the advantage must remain with the ship built for war purposes as against the merchant steamer improvised into a cruiser; but still it cannot be doubted that the Admiralty list of merchant steamers would be a most valuable addition to the resources of the country in the event of war. It should not be forgotten that the owners of the fine mercantile steamers to which we have been referring, have entered their vessels in the Admiralty list for no fee or reward, but solely in patriotic response to the appeal made to them. Of course if the country had to make use of them, they would

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be paid for; but it should be remembered that at present we possess a large reserve of which all the special qualities of each individual ship are known to the Admiralty, and for which we pay nothing. We think the Government should show their appreciation, at least in one way, by employing as transports and for other like purposes only those vessels on the list for employment in war. It is, perhaps, necessary to say in conclusion that, in spite of the advantage obtained by large coal capacity in the merchant ship, we should by all means advocate the building of a sufficient number of unarmoured war ships, in fact they should be considered as taking the place of the frigate or corvette of the olden time, the ironclad being the line-of-battle ship. An efficient squadron needs a proper proportion of each class, the one for heavy fighting, the other for skirmishing and pursuit.

There is, however, the third arm of the service, the torpedo boat, and it is said that our deficiency in this respect is much more serious than either in ironclads or cruisers.

Dividing torpedo boats into three classes: *a*. those which are carried on board ironclads; *b*, boats under 100 ft. in length and chiefly useful for coasting purposes in moderate weather; and *c*, boats over 100 ft. long and supposed to be able to keep the sea in all weather; it is said that we have 60 of the *a* class, 9 of the *b* class, and none of the *c* class afloat, but 4 building. It is stated that France has 45 of the *b* class and 18 of the *c*; Italy 4 of the former and 12 of the latter. Even Austria and Greece have over a dozen of the powerful *c* class, and Germany has recently given orders for the building of over 100. It is no doubt the fact that small craft of this class can be rapidly built, but it is imperative that we should have a sufficiently large number already built to cope with those of any other power. At present it would appear that there are not enough in the English fleet to enable our officers to be familiarised with the way of manœuvring them in action. There can be no doubt that now public attention has been called to the subject, the Government will seriously set to work in the matter. We do not think that anything should prevent the Admiralty from at once commencing the construction of a large number of properly constructed torpedo boats, but we would suggest that an attempt should be made to

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ascertain whether there are not among the large number of steam yachts to which we referred in a paper in our last number, some which, having high speed and seaworthy qualities, might be available for use as torpedo boats in the event of war. Might not the same thing be done in this respect with regard to yachts, which has been already so successfully accomplished in respect of passenger steamers.

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## DEEP-SEA SOUNDINGS AND TEMPERATURES IN THE GULF STREAM OFF THE ATLANTIC COAST, TAKEN UNDER THE DIRECTION OF THE U.S. COAST AND GEODETIC SURVEY.

By J. R. Bartlett, Commander U.S. Navy.

I HAVE come to this meeting of the Association for the Advancement of Science (Montreal) at the kind request of Mr. Hilgard, the Superintendent of the Coast and Geodetic Survey, to tell you of the investigations made by the steamer *Blake*.

The hydrographic party of which I have charge, has been investigating the Gulf Stream for the past four years, the last two summers having been passed on our immediate coast. All of you have ideas or pet theories in regard to this great river of the ocean, as Maury has happily called it. Many of our greatest scientists have written learnedly about it. Professor Bache, while he was Superintendent of the Coast Survey, caused extensive and systematic investigations to be made of its physical features. From the data obtained, the stream was assumed to start from the Caribbean Sea, making the circuit of the Gulf of Mexico, and to issue with great velocity and high temperature from the Straits of Florida, continuing to about latitude 45° N. It was described as a superficial stratum of warm water flowing over one of cold, with banks of cold water, and divided or bifurcated into warm and cold bands.

The bifurcation was explained by the presence of hills and valleys which were developed by the soundings, the cold water being said to be in the valleys and the warm water on the elevations. As no

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soundings were obtained in the strength of the current, it was supposed that the stream ran over, if not in, a great trough or depression of the sea-bed. At the time the investigations were made under the direction of Professor Bache, the means of obtaining the depth of the sea were very imperfect; now we have the most improved apparatus, and soundings can be taken with wire in any current and to any depth with almost perfect accuracy.

The investigations made on board the *Blake* show conclusively that the above assumptions are wholly erroneous. My soundings give no channel for the Stream to run in, there are no hills or valleys, and I have never found any bifurcation or warm and cold bands. The temperatures obtained do not show cold water beneath the Stream, but a current of warm water between the Florida Straits and Cape Hatteras down to the very bottom.

As has already been stated to this Association by Mr. Hilgard, the current entering the Gulf of Mexico from the Caribbean Sea does not make the circuit of the gulf as formerly supposed, but passes to the northward and eastward in the same general trend as the Yucatan Plateau, and thence to the Straits of Florida.

The lines of soundings taken by the *Blake* were twelve in number, beginning at Jupiter Inlet, Florida, and extending to Currituck, N.C. They were run normal to the general coast line.

The soundings give very interesting data in regard to the physical features of the bottom of the ocean over which the Gulf Stream flows. Instead of a deep channel in the course of the Stream, as reported by Lieutenants Maffitt and Craven, and published in the Coast Survey Reports, our later soundings with *wire* show an extensive and nearly level plateau extending from a point to the eastward of the Little Bahama Banks to Cape Hatteras. Off Cape Canaveral this plateau is nearly 200 miles wide, and gradually contracts in width to the northward until reaching Hatteras, where the depth is more than 1,000 fathoms within 30 miles of shore. The plateau has a general depth of 400 fathoms, suddenly dropping off on its eastern edge to over 2,000 fathoms.

The course of the Gulf Stream can be traced by a study of the specimens of the bottom obtained; on each side of the Stream the sounding cylinder brought up ooze, but in the strength of the current

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the bottom was washed as bare of ooze and all living things as the bed of a mountain torrent. Instead of a cushion of cold water at the bottom, the temperatures were the same as those found at the corresponding depth of 400 fathoms in the Windward passage and in the course of the current through the Caribbean Sea and Gulf of Mexico.

The temperature of the surface-water was taken every mile on all lines and in no case were there found any warm or cold bands. There was a slight rise of temperature on entering the current, at the surface, and also a corresponding rise at the bottom in the same locality. The surface temperatures found in the Stream were much below those generally given in published works on the subject. The average temperature in the axis of the Stream rarely exceeded 83° F. in June and July. On one or two occasions the thermometer read as high as 86°, and once 89°, but it was at high noon in a dead calm. The temperature at five fathoms did not range above the average of 81½°. The surface temperatures did not indicate a cold wall inside of the Stream; the water between the one hundred fathom-line and the shore seemed to be an overflow of the Stream, as the temperatures at five, ten and fifteen fathoms were nearly as high as those found in the Stream.

Lines for series of temperatures from the surface to the bottom were run during the past summer from Block Island to the Bermudas, and thence to Hatteras. The isothermals show the Labrador current until nearing the Stream, when they descend gradually, and in the stream itself abruptly, to their greatest depths. Instead of the warm stream-water thinning away as it was reported to do when spread out, it was not much over fifty miles in width at the time of our crossing, as shown by the current and high surface temperatures. The temperatures below the surface were much higher than at the same depths off the coast.

The ordinary temperature at the bottom off Savannah and Charleston in 400 fathoms was 45°. In the Stream between Block Island and the Bermudas it was as high as 55° at 400 fathoms. The isothermals remained at almost the same depth to the southward, as in the Stream, on the entire line to the Bermudas. Just north of the Stream the temperature at 400 fathoms was 39½° and



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40°. At a point well in the Labrador current away from the Stream, the temperature at 400 fathoms was 38¼°.

From the Bermudas to Hatteras the isothermals were at the same depths as were found south of the Stream on the previous line, but when in the current off Hatteras, where the stream trends to the eastward, they rose to the same depth as off Charleston and Savannah on the plateau.

These temperatures below the surface seem to suggest that the Labrador current underruns the Stream at Hatteras, but at no other point. It probably keeps its natural boundary or western wall along the 1,000 fathom curve, and thus follows around the plateau towards the equator. No definite conclusion can be drawn from the data obtained thus far; but we have at least a clear field to work upon in the future, in regard to temperatures and currents, and the contour of the bottom as far as Hatteras is well pourtrayed.

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## SHIPPING LAW.—FINAL JUDGMENTS.

SINCE our last notice of Final Judgments, in the July No., p. 642, there has been a remarkable dearth of decisions of either of the Courts of Final Appeal—The House of Lords and Privy Council—on matters of Shipping Law. There are in the authorised reports two only, and one of those we hesitate to put before our lay readers, as we cannot help thinking that the report is erroneous, for if correct, it would appear to be in contradiction of the ordinary incidence of damages when both vessels are held to blame for a collision; therefore, without dwelling further on that case for the present, under the impression that the report will be hereafter corrected, we have only to refer to the one remaining case.

*Grant & Co.* v. *Coverdale, Todd & Co.*, 9 App. Cas. (H. L.), 470. This was a case on the construction of a charter-party, by which the s.s. *Mennythorpe* was to proceed to "Cardiff, East Bute Dock, or so near, &c., . . . . and there load always afloat in the

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customary manner from the agents of the freighters a full and complete cargo of about 1,800 tons of bar or bundle iron."

"Cargo to be supplied as fast as steamer can receive at all hatchways for loading. . . . . Time to commence from the vessel being ready to load and unload and ten days on demurrage over and above the said lay days at £40 per day. (Except in case of . . . . frosts . . . .)"

As most of our readers know, the East Bute Dock communicates with the West Bute Dock by a canal, and there are private wharves in both docks whence iron is shipped. One manufacturer, however, Messrs. Crawshay, have no wharf in either dock, but have one in the Glamorganshire canal which communicates by a Junction canal with the West Bute Docks.

The *Mennythorpe's* cargo was to consist of 400 tons from a firm having a wharf in the East Bute Dock, 400 tons from another firm having a wharf in the West Bute Dock, and the balance of 1,000 tons from Messrs. Crawshay.

The *Mennythorpe* arrived at the East Bute Dock on 10th January, 1880, and by the 13th January had loaded the iron ready for her in the East and West Bute Docks, and also a small portion of Crawshay's, which was brought down in barges to her. On the 13th a severe frost set in, and from the 16th to 31st January the canal was impassable for barges in consequence of ice. The East Bute Dock itself was not frozen over, and if the cargo had been by any means brought alongside the *Mennythorpe*, she could have loaded it and gone to sea. The question, therefore, was whether the loading was prevented by *frost*, so as to release the charterers from their obligation to load as fast as the steamer could receive. And it was held by the House of Lords unanimously, Lord Selborne, Lord Watson, Lord Bramwell, and Lord Fitzgerald, that the loading was not so prevented, as although the usual method of bringing iron from one wharf was prevented, that was not a matter which concerned the shipowner, as there were other wharves and other means of bringing it from the wharf in question, *e.g.*, by land carriage, though at much greater expense to the shipper.

The lesson to be learnt by this is to be careful in entering into a charter-party to consider all probabilities and possibilities, and in



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case of not only a port situated as Cardiff is but in all ports where access is liable to be blocked or impeded by frost or snow, for charterers to insert a clause, if they can get shipowners to accept it, covering not only the case of the actual loading of the ship, which may be lying in salt water a mile or more off the shore, clear of all ice, being prevented; but also the possibility of access from the actual shipper's works or stores according to the usual method being hindered.

Shipowners on the other hand will do well to stand by the existing form of charter-party, especially in places with which the charterers may be much better acquainted than themselves. Suppose, what is not impossible, that the canal instead of being blocked for about a fortnight had been blocked for, say, six weeks? In such a case at Cardiff some one must lose heavily; the shipowner on the one hand, and his officers and crew will prefer lying in dock doing nothing, whilst the former is getting a handsome hire for his vessel out of the demurrage without any sea perils, and the latter are getting full pay; whilst in the other alternative he will have to pay his crew shipped for the voyage and get nothing at all for his ship whether under charter or not.

SEA LAWYER.

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## THE NAVY.

IT has been well said that speed is the aristocracy of the sea, and it is equally true that the empire of the sea means the empire of the world. Foreign nations may arm their hundreds of thousands or even millions of men, fortresses and arsenals may be constructed and armed, but so long as the Navy of England is pre-eminent, the country has nothing to fear from the most formidable combination of European powers. The command of the sea is however necessary to our existence, and the recent advance made by France, Italy, and Germany in naval architecture and gunnery, has shaken the faith of those whose opinions on the fleet is well worthy of con-

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sideration. It is not uncommon to hear it remarked in society when the topic is discussed that the Admiralty are well aware of our weakness, but are powerless to act without the sanction of the Government. If this really represented the state of the case the duty of the Admiralty is to remonstrate, and if necessary, to resign. It is not, however, probable that any Government would accept a responsibility which, from the foundation of England's maritime power to the present time, has always been in the hands of professional officers, nor would these officers if they were unduly interfered with accept an appointment under such degrading conditions. Statistics have of late been so freely handled and twisted for party purposes that it is useless to attempt to draw satisfactory deductions from them. Thus the only practical method remaining is to refer to the "Navy List," and ascertain what ships constitute the fleet proper. It is desirable to adopt this method because one of the last comparisons made was based entirely on tonnage, evidently a dangerous method when it is remembered that our largest ships, the *Minotaur*, the *Agincourt*, and the *Northumberland* of 10,690 tons displacement, have only six-inch armour; the *Achilles* of 9,820 tons displacement, the *Black Prince* of 9,210, and the *Warrior* of similar tonnage, have even less. This is not, as I shall briefly explain, the only weak point of these six first-class ships, whose aggregate tonnage amounts to the respectable figure of 59,700. To commence with the opening sentence of this article, "Speed is the aristocracy of the sea." Now, the maximum speed of the swiftest is not, under the most favourable conditions, in excess of 12 knots per hour. To command this now insignificant rate of steaming entails a consumption of at least 120 tons per day, and to use the words of one who knew them well, "as much more as you like to give." This rate of steaming would empty the bunkers under five days. The projectiles from their 12-ton guns would not, in close action. penetrate the armour of the new ironclads of France or Italy, while theirs would with ease pass completely through both sides of the vessels named. Although these once powerful ships manœuvre easily by the aid of steam steering gear and well balanced engines, it would be impossible for the ablest seaman and most skilful

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tactician to prevent an active enemy, if his ship possessed commanding speed, from ramming them. Although they are constructed with a double bottom, the space between the outer and inner skin is not sufficiently deep to absorb the force of a blow delivered by a body weighing several thousands of tons at a high rate of speed. After the inner plating is crushed up there are no longitudinal bulkheads to localize the inflow of water; it would have full sway from side to side, and should an opening be made in the engine-room, neither seamanship nor courage will avail to save them. These once powerful ships are, therefore, of the past, and totally unfitted to risk an action with an enemy possessing superior speed, ample powers of manœuvring, and weight of metal. Their great length (400 feet) also renders them particularly liable to be successfully attacked by torpedo boats, the moving fireships of modern warfare, or a torpedo might with greater facility be launched against them from an opposing ship. A target of such unusual length offers to an active enemy opportunities for this mode of warfare which most certainly he will not fail to take advantage of. The ponderous rig, with its massive yards and wide-spread of canvas, are a standing menace to the propeller, and if the light missiles used in the Revolutionary war not infrequently succeeded in dismasting an enemy's ship, what may we not look for from the huge projectiles of a 50 or even a 100-ton gun. This difficult problem is worthy of the attention of all naval officers and naval architects. It will never do to accept a measure of power based on a mere statistical report, unless the adjuncts are carefully collated and weighed in the opposite scale. In this instance, statistics based on tonnage in lieu of inducing confidence indicate in the most emphatic manner that the conclusions which have been drawn from them are wholly unreliable.

The *Lord Warden*, of 7,840 tons displacement, with 18 guns, and the *Repulse*, of 6,190 tons, with 12 guns, are still in commission as armour-plated ships of the First Reserve. These ships, with a combined displacement of 14,030 tons, are doubtless included in the list which contains the full complement of our naval strength. Originally wooden three-deckers, they were razeed and iron-plated to meet a supposed emergency. Owing, however, to their rapid

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and deep rolling, not infrequently 12 times a minute, with an occasional roll and lurch combined of nearly 70°, officers concluded that in a seaway it would be professional suicide to cast the 12-ton guns loose in heavy weather. Under these conditions they would be at the mercy of the smallest fighting ship whose superior sea-going qualities enabled her to command a steady platform. Built wholly of wood it was not possible for the most skilled constructors to fit them with perfect watertight bulkheads, consequently a single well-directed shot below the armour belting would prove fatal. The original lower masts are retained, but above the tops their warrant is that of a 40-gun frigate. In these specimens of an extinct type every possible element which is detrimental to the efficiency of a modern man-of-war is effectually combined, yet still she is seen year after year solemnly sailing in line as an integral part of England's First Class Reserve. Had she held the position of the *Valiant*, when that ship was struck, not rammed, by the *Defence*, during the recent cruise of the coastguard ships, the nation might have had to mourn the loss of a goodly portion of her ship's company.

If naval battles could be decided by displacement of tonnage in lieu of torpedoes and missiles from 100-ton guns the nation might rest and be thankful.

The *Valiant*, of 6,710 tons and 18 guns, the *Hector*, of 6,710 tons and 18 guns, and the *Defence*, of 6,270 tons and 16 guns are lightly plated, lightly armed, and heavily rigged, with a rate of speed quite incompatible with the requirements of modern naval warfare. These three ships absorb the large amount of 19,690 tons.

The *Audacious*, of 6,010 tons and 14 guns, the *Iron Duke*, of 6,010 tons and 14 guns, and the *Swiftsure*, of 6,910 tons and 14 guns are a fair type of ship for foreign service. But it must be borne in mind that fifteen years have elapsed since their talented constructor designed them. The double battery, however, forms a source of weakness which in action might lead to their being placed *hors de combat* by the explosion of a single shell in the lower compartment. There is the further disadvantage in this system of the smoke of one battery obscuring the view of the other during a calm for an in-

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definite length of time, in fact, reducing the value of the armament by almost one-half.

The loss of the *Vanguard* indicates how necessary it is for commanding officers to possess a thorough knowledge of the nature of the construction of their command, and on no account ever to sacrifice safety to comfort. Had the bulkheads been intact, it is probable she would now be rendering good service.

A few years since old officers entertained extraordinary ideas as to the peculiar merits of certain classes of ships. This was evinced in the strongest manner by a discussion which was carried on in the pages of the *Times* for some days. These officers, whose names have gone into oblivion, were ready to take charge of our grain convoys during a maritime war, and to protect them from the inroads of privateers in national disguise, by the aid of the wooden frigates and sloops which then formed the principal portion of the cruizing fleet. Not long after this, at the launch of a small ironclad with an historical name, a gallant officer in returning thanks for the Navy, informed the company that the mission of this vessel was not to fight in line-of-battle, but to hunt up the wasps which, in the future, would hang on the commercial marine of this country. That ship never attained a speed of ten knots, and, after sundry mishaps to her machinery, was relegated to an honourable coastguard retirement. The remarkable feature of the case is, that at the time there were steamers on the Atlantic with an average speed of sixteen knots, and a coal capacity which enabled them to girdle the earth without calling at a single outport for coal. Comment is needless.

Wood, as a material for shipbuilding, has practically become obsolete, and it is evident that the cruizers of the future must be very differently designed from those of the past. The wing passage and the wooden shot-plug which once formed so important a part in naval engagements, must give place to the double-bottom, and a goodly number of water-tight divisions, quite regardless of the manner in which it may interfere with the internal fittings and cabin accommodation. Indeed, the interior must follow the exterior, just as the ugly modern ironclad has displaced the symmetrical screw line-of-battle ships and frigates.

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It is doubtful if great naval battles will form a distinguishing feature of the wars of the future, for, owing to the altered type of merchant ships, which enables them, in a greater measure than formerly, to look after their own safety, the enormous expense attending the cruising of a fleet, and the short distance they could cover without coaling, precludes the possibility of their visiting remote colonies, after the fashion of the fleets of Nelson and Villeneuve. But while the trading steamer will not have much to apprehend from the presence of large fleets, the swift single cruizers form an element of danger which cannot be contemplated without grave feelings of anxiety. The Treaty of Paris abolished privateering in theory, but in practice it will go on to an unlimited extent in another form. Russia was ready immediately war was declared to launch a fleet of temporarily-armed cruisers manned by her national marine against the Mercantile Marine of this country. Before England could have *contrived* to raise a squadron to intercept them the Pacific would have been swept from Alaska to Cape Horn. It matters not that only a small proportion of the captures might reach a Russian or a neutral port, the loss would be ours, if the gain was not theirs. This question is one to which neither the nation nor the Admiralty appear to attach sufficient importance. Statistics indicate that the majority of our supplies of food are imported from countries beyond sea, and the bare possibility of a check on the steady stream which is ceaselessly pouring in must command attention. The situation is unique. On the Continent the most rigid blockade by sea, harassing as it might prove, could not debar produce from passing over the frontiers by the numerous railways which now link Europe together. So long as the necessaries of life had not to be imported, our insular position was a subject for unmixed satisfaction. The steady growth of the navies of all the maritime states of Europe has in some measure lessened its value. Sir W. Armstrong, no mean authority, emphatically condemns the visionary scheme of converting merchant steamers into armed cruisers. The reasons against it are cogent and manifold. In an age when the annihilation of an empire has been accomplished in a few weeks, it is the duty and the interest of this country not only to have a fixed plan of action, but to have

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the machinery and *personnel* ready to act at the shortest possible notice. This opens up the question as to the number of weeks it would take to convert the steamers on the Admiralty list into men-of-war, and the method of accomplishing it. Naval officers insist that it is absolutely necessary to have the machinery and boilers of a fighting ship below the water line. In no single instance are merchant steamers thus fitted : indeed, the best of them have the top of the high pressure cylinders as much as 16 feet above that point. The boilers are also similarly exposed, and from their position it is not practicable to prevent their being pierced by a broadside or end-on fire. From the results of a limited number of experiments on the *Oberon* it is inferred that a pad of coals will effectually keep shot and shell from injuring the machinery. Even if this were so, it is evident that the level of the bunkers begins to fall immediately the cruize is initiated. Again, the main discharge and bilge pipes are invariably above water. There are many weak points besides those already named. At the load draft the rudder stock and a portion of the plating below are exposed. The steering-gear, whether hand or steam, is also liable to derangement in many ways. In no instance are longitudinal bulkheads fitted, and the filling of a single compartment in the ends interferes with the steering properties and renders manœuvring difficult. The constructor who has this department under his charge holds one of the most important offices in the profession ; one which he certainly ought not to accept with a light heart. It is to be hoped this proposal is temporary only, and that at no distant period the country will possess a numerous class of cruizers whose speed and fighting power will alike command the confidence of the Navy and the public. Even the loss of the ill-fated *Wasp* opens up a subject from which much may be learned. Suppose, for example, that the danger of her position had become known to those in charge at an earlier period than it really was, and that by dint of making sail and bracing the yards up she had rounded the north-west point of the island, but in so doing had struck and bilged, what would have become of her ? The answer is not far to seek ; she would have foundered in deep water, and probably drowned the majority of her crew. No man-of-war ought to be constructed to render

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such a disaster possible, yet there is too much reason to infer that a large proportion of the sloops and corvettes would, like the *Lord Warden* and the *Repulse*, succumb to the effects of a single shell. The question of effective leak-stopping in great emergencies is beset with many difficulties when the ship is water-borne. Stranded iron vessels are often successfully platformed and safely navigated to a port where permanent repairs can be executed. Occasionally, however, heavy weather causes the frame to work, the platform opens up, the water gains on the pumps, and the ship founders. At sea this plan cannot be followed, hence the seamen of the future must hold themselves ready to adopt methods of safety for which written directions are of little practical value.

The introduction of steam power has given continental nations a great advantage. So long as England could only be invaded by the aid of sail power, men slept safely, for there was a well-founded feeling that where seamanship came to the front we had few equals and no superiors. Just as arms of precision have lessened the value of personal courage and strength of arm, even so has the machinery of modern warfare brought the foreigner to the level of an Englishman. It was seldom that the former attempted the hazardous exploit of cutting out an enemy's ship from the shelter of a battery. The English naval records are full of such incidents. Occasionally they would be beaten off with heavy loss only to return again with renewed resolution to the assault. Neither boarding nettings tied up to the yardarms, or chains attached to the shore, kept these men of iron from carrying out their object. W.

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We regret that we are compelled to defer until our next number the publication of Professor Elgar's very able address on the Scientific Study of Naval Architecture, delivered at the Glasgow University on the 11th November.

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## ANNALS OF LLOYD'S REGISTER.

THE completion of the 50th year of the existence of Lloyd's Register of British and Foreign Shipping on its present basis is the occasion of the production of a handsome volume, a copy of which is to be presented to each subscriber to the Society, entitled Annals of Lloyd's Register.

We venture to congratulate the members of the Society on the very hale and hearty condition of their institution at this anniversary of its jubilee, and also on the issue of the very handsome memorial of the interesting event.

As is well known, the Society performs a very useful function in connection with our Mercantile Marine fleet, and acts as one of the many checks on flagrant neglect in respect of the seaworthiness of vessels. In its connection with the great association for facilitating the business of Marine Insurance, Lloyd's Register is a most valuable adjunct, and in the course of its development has done much to stimulate the safe and sound building of ships and the adoption of numerous improvements in naval architecture.

And although it exists as a private body independent of Government direction or control, and is in successful competition with other Registers, and although we have not at all times agreed with the action taken by the Society, yet we are glad to acknowledge that Lloyd's Register occupies a high and honourable position, and deservedly has the confidence and respect of the Shipping Community.

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## CORRESPONDENCE.

### OIL ON THE WAVES.

*To the Editor of the "Nautical Magazine."*

DEAR SIR,—I have noticed many articles on oil applied to broken seas lately, as if it was a novelty. My remembrance goes back to my apprenticeship, thirty-seven years ago, hearing the mate who had

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commanded one of the Greenock Newfoundland brigs describe how, on a wild night in the North Atlantic, he had once run the brig till he was afraid to round her to, and noticing the effect of some grease from the galley on the sea, broached the cargo (seal oil), and the effect was so beneficial he ran on safely, and made the voyage from St. John's to Tory in a then unprecedented time. The quantity used was not mentioned. It does not seem to be generally understood that the oil must be placed to windward of any object to profit by its effects.

I am, dear Sir, yours faithfully,

JAMES GORDON,
Commander s.s. *City of Agra.*

Calcutta, 13th Oct., 1884.

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## ENGLISH *VERSUS* FOREIGN SEAMEN.

*To the Editor of the "Nautical Magazine."*

Mr. Editor,—I note under the above heading in your September number the letter by "Cosmopolite," and ask your permission to make a few remarks upon it.

Like him, I am English, or rather British, but *unlike* him, I have sailed under other flags. I have never found any pleasure in sailing with foreign crews.

They are all very well *after* they have been licked into shape by having obeyed the conscription laws of their respective countries. Otherwise I fail to see their superiority. "Cosmopolite" mentions Lascars. They are right enough in certain class ships, but are perfectly useless in the ordinary cargo-steamer of to-day. But are not Lascars British subjects.

He also refers us to dockmasters, &c., to prove that the English sailor is the most troublesome and incompetent. How these persons (pilots excepted) can judge of their incompetency, I have yet to learn.

Patriotism can have very little, if anything, to do with who we ship now-a-days. Competition is too fierce, and the shipowner, naturally enough, purchases what he requires in the cheapest market.

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I am quite ready to admit, Sir, that we have deteriorated greatly, but *only* in numbers. The cause is not far to seek. When the schools are broken up, the scholars are scattered. Where are the Greenland whalers, Geordie brigs, and Billy Boy schooners of former days?

These were the recognized schools for rearing seamen. They have nearly disappeared. The apprenticeship system is done away with, and the few sailors that are left are being pretty quickly used up by steamers, who do *not* make the same class of *men* to fill their places. As a proof that the British sailor of to-day is less degraded than he was formerly, *I* ask "Cosmopolite," water and land police, pilots, &c.,—Where are the dens that formerly infested the Highway? Where are the mahogany bars and Dan Lowries of 20 years ago? They, Sir, are fast disappearing in all parts; and yet "Cosmopolite" would have us to believe that *we* are morally worse than we formerly were.

May I ask *him* to *do* his *mite* to raise our mental and moral status by shipping an English crew next voyage. Giving them something *more* to eat than the miserable Board of Trade allowance —(if his employer will let him, mine does)—which is a disgrace to our civilization, and studying their comfort a little bit. In fact, let him try to sail a comfortable ship, and I am sure that in a very short time he will prove the truth of that very old saying *the devil is not so black as he is painted.* I never carry a foreigner if I can avoid it. I have had men sail with me on short voyages a whole year and more on a stretch. I have men with me now who are making their fourth Mediterranean voyage and ne'er a growl yet. Let "Cosmopolite" try and do likewise.

He talks of sailors saving money. It would be a wonder if he could on £3 per month. In fact, how their wives and families live whilst they are away is a wonder. The following is an exact copy of a cutting I took out of *Reynold's Newspaper* some time ago. As it refers to British seamen I do not think it out of place, *if* you can find a place for this my first attempt at *rushing into print.*

"Our Men-o'-War's Men.

"How great a change has come about in the habits of our men-o'-war's men since the old days when 'leave-ashore' was so com-

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monly the signal of racket and license, can be seen in Governor O'Brien's recent report, wherein details are furnished of the visit last year of the reserve squadron of eight British ironclads, under Rear Admiral Sir A. Hoskins, to the island of Heligoland.

"The vessels," says Colonel O'Brien, "were visited by almost the entire population, and if their appearance and power were sources of admiration and wonder, *the conduct of the men, who landed to the number of nearly* 2,000, without the slightest irregularity or *drunkenness*, elicited equal praise on all sides. The good effect of such a visit, adds the governor, cannot be over-rated, especially seeing that while *our* flag has heretofore hardly ever been seen here, there is scarcely a week that we have not *foreign* men-of-war in our roads. A few days later the *German* squadron of four similar ships paid, we are told, a visit to the island, but we learn that though the *officers* landed, the *men* were not permitted to come ashore."

This, Sir, is not saying *much* in favour of the square head at any rate. I enclose my card and remain,

Yours truly,

Palmero, Nov. 3rd, 1884. "TOLEDO."

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## REGULATIONS FOR PREVENTION OF COLLISIONS AT SEA.

*To the Editor of the "Nautical Magazine."*

DEAR SIR,—At a meeting of the "German Shipmasters' Society of Hamburg" the new Rules of the Road, in force since the 1st of September last, were discussed, but we did not quite understand several points, and the Society would feel very obliged if you kindly would give us your opinion on the following points:—

The new Article (10*d*) says: "If a vessel, when fishing, becomes stationary," &c., &c., "she shall show the light and make the fog-signal for a vessel at anchor." This, translated into German, tells us, that such a stationary vessel shall at all times show the light and make the fog-signal, whether clear or not. Now we cannot think that such is the opinion of the "law makers."

Further Article 18: "Every steamship," &c., &c., "shall slacken her speed, or stop and reverse, *if necessary*." Our German Article has it this way: "Every steamship," &c., &c., "*shall* slacken her speed,

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and, *if necessary*, stop and reverse." After our opinion there is a great difference between the two; our German Article says: "Every steamship *shall* slacken her speed" (*always*) "and stop and reverse *if necessary;*" while the new Article 18 means: A steamship shall (only) slacken her speed or stop and reverse if necessary, so that the "*if necessary*" applies also to the slackening of speed.

That is our translation, and if we are wrong we would feel very much obliged if you would set us right by a few words.

We are, dear Sir,

For the "German Shipmasters' Society,"

T. MESSTORFF.

Hamburg, Steinhöft 1, November 7th, 1884.

[We are always very glad to assist as far as we can in these matters, and to give our opinion for the guidance of our subscribers. It may, however, happen that a Court of Law is the only body from which an authoritative opinion can be obtained, and it may happen that the opinion of such a Court may differ from ours. With the above reservation and being intimately acquainted with the rules, we give the following opinions on the two points raised. It is for our correspondents to judge of our opinions by the light of reason and the aid of common sense, and to adopt them or to reject them as they may think fit.

*As regards Article* 10*d*. This Article provides that "If a vessel when fishing, becomes stationary in consequence of her gear getting fast to a rock, or other obstruction, she shall show the light and make the fog-signal for a vessel at anchor."

In plain words, if she is "anchored" by her "gear" she shall make and show the same signals as she is required by the regulations to make and show when she is "anchored" by her "anchor." The rules are to be applied in precisely the same way and to the same extent. For instance, she is to show her white light and no other light when anchored; but this is only applicable "between sunset and sunrise." She is not required to show a light in the daytime. In

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the same way she is "in fog, mist or falling snow" to "ring the bell." She is not to ring the bell if the weather is clear.

*As regards Article* 18. The question is, whether the words "if necessary" qualify the whole article or only qualify a part of it. The English version of the last edition of the rules is precisely word for word the same as the preceding English version; and there can be no doubt that in it the words "if necessary" do qualify the whole article, and that every steamship when approaching another ship so as to involve risk of collision, is to slacken her speed if necessary, to stop if necessary, and to reverse if necessary. It is only usual in English composition to repeat the qualifying words once in such a combination of words as make Article 18. The common sense view of the case of course is consistent with the construction we have put above, for the reason that, in some exceptional cases, collision can only be avoided by one of the two steamers going full speed ahead to keep out of the way of the other. On this subject we would refer our readers to Mr. Gray's last new book.*

We may add that in the first English version of the rules, what is now Article 18 was then Article 16, and was as follows:— "Every steamship, when approaching another ship so as to involve risk of collision, shall slacken her speed, or, if necessary, stop and reverse." The wording was ambiguous owing to the use of the disjunctive word "or," instead of the conjunctive word "and." But as the old Article stood it was held to mean that the speed should be slackened whether necessary or not, and the engines should be stopped and reversed when necessary. The new Article 18 is an improvement on this, as it leaves on the master of the ship the responsibility of slowing only "when necessary."— Ed. *N. M.*]

* Copies can be obtained in Hamburg of Messrs. T. Messtorff & Co., Steinhöft 1.



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## OUR LIBRARY TABLE.

*The Seaman's Guide to the Law of Storms; the Circular Theory of Storms and its Modification as due to the Incurvature of the Winds; together with a Summary of the Results of Recent Investigation; and the Questions for Masters and Mates.* By W. H. Rosser, London. Norie and Wilson, 185, Minories. 1885.

Mr. Rosser is a well-known writer on nautical matters, especially in connection with navigation and ocean meteorology, and he has the rare merit of being able to express himself with clearness and conciseness. His present contribution to the subject of the law of storms is especially interesting as dealing with the more recent and modified views of the so-called *circular* theory of storms, and showing that, from observations made in various parts of the world, there is in cyclones a marked tendency to incurvature of the wind in the same parts of the storm-field. Upon this point Mr. Rosser adduces a great deal of valuable evidence, and supports it with his own expressed opinions with the result that the phenomenon of the agitated area is rendered more comprehensible to the mind of the mariner who, by observation of certain well marked indications, can so manœuvre that he is enabled to keep his ship out of the most dangerous part of the cyclonic disturbance. There are also many useful hints given by the author concerning the progressive movements of storms in both hemispheres, and the dangerous portions of the disturbed area, together with suggestions as to the manœuvres which may be adopted under certain circumstances to keep out or to get out of the track of a cyclone.

With the object of making the little book of practical value to seamen, the questions on the law of storms as given at the Local Marine Board examinations for masters' and mates' certificates are given with directions for answering them. On this point we need only say that if a candidate answers the questions when before the examiners as satisfactorily as Mr. Rosser has answered them in this little book, he need have no fear of passing in this particular subject.

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There is one point which Mr. Rosser's little book demonstrates with good effect, viz., that later observations, and a more critical investigation have developed a more accurate knowledge of the general subject of the law of storms. In the interests of our constituents, we are glad to recognise this onward movement, and to acknowledge the services of such indefatigable workers in this branch of knowledge as the author of the useful little book now before us.

*Liste Annuelle des Yachts Francais, Belges, Espagnols, Italiens, Portugais, &c.*, 1884-85. Paris. This is the third annual list of French and other Continental yachts, and is published at the office of *Le Yacht*, Paris. The list is tastefully got up in a handy-sized volume, and for each vessel the dimensions and tonnage are given, with particulars of the machinery in the case of steamers, also the builders and owners names, date of build, &c. There are also the flags of the Continental Yacht Clubs, a list of French yacht-owners, &c.

*Der Befrachter, Ein Berather in wichtigen, Fragen für Schiffskapitäne, Rheder und Kaufleute.* By W. Doring. Hamburg, 1885. L. Friederichsen & Co. Third edition, rewritten and enlarged. The motto which is printed on the title-page of this work—"Navigation is the smallest part of what a shipmaster must know, the doing of ships' business in harbour is far more important," if somewhat overstated, certainly serves to indicate the purpose of the book, which is a complete manual of the business of a shipmaster in harbour. The freightage of ships, the customs of various ports, insurance, &c., are all ably and fully dealt with, and the work must be most valuable to German-speaking shipmasters and shipowners.

Our *Nautical Notices*—British and Foreign—are unusually full this month; and many of them of more than ordinary importance. Those of our readers who trade to the Baltic will find the notices relating to that sea, as well as the approaches thereto, very numerous.

The books, pamphlets, and papers on our table are as follows:—

*Sound Signals.* By Arnold B. Johnson, Chief Clerk of the United States Lighthouse Board. We shall take some further notice of this pamphlet in a future number.



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The *Quarterly Weather Report*, 1878; *Appendices and Plates*, and the *Monthly Weather Report of the Meteorological Office*, for July and August, 1884; both published by the authority of the Meteorological Council; these works are carefully-compiled records of the weather systems of the British islands. *The Shipwrecked Mariner*, quarterly part for October, continues amidst much varied and readable matter, to give the record of "great gales."

Mr. Wm. Smith, the Deputy Minister of Marine of Canada, has favoured us with a copy of his valuable paper on the Lighthouse System of Canada, read at the recent meeting of the British Association at Montreal. We hope to publish a summary of this paper in an early number.

*Revue Maritime et Coloniale* (Paris), for November, gives its readers papers on the position of "England in the Mediterranean," "Circumpolar Stations" for scientific observations, and the "Meteorology of the Soudan," together with other technical subjects relating to French and foreign affairs. *Bulletin de la Societé de Geographie de l'Est* (Nancy), 3e trimestre, for 1884, contains a well-selected series of scientific papers.

The system of weather-telegraphy, in Japan, is explained by our old friend, E. Knipping, in *die Wettertelegraphie in Japan*. *Vierteljahrsschrift der Astronomischen Gesellschaft* (Leipzig), 3rd part for 1884, is before us, as is also *Meteorologische Zeitschrift* (Berlin), for September. *Annalen der Hydrographie und Maritimen Meteorologie* (Berlin), Heft X., and *Mittheilungen aus dem Gebiete des Seewesens* (Pola), Nos. IX. and X., are well posted to date on all the subjects discussed.

We have also received Messrs. L. Friederichsen & Co's list of charts and nautical books (Hamburg) for 1885, and another volume of the reports of enquiries into maritime casualties, *Entscheidungen des Ober-Seeämter des Deutschen Reiches* (Hamburg), 1884; *Revista del Ejercito y Armada de Filipinas* (Manila), 1884; *Boletin de la Sociedad Geografica de Madrid* for September; also the current numbers of *Rivista Marittima* (Rome), *Rivista della Marina Mercantile* (Trieste), *Le Yacht* (Paris), and Van Nostrand's *Engineering Magazine* (New York).

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We have also to hand all the usual serials and periodicals, viz., *Hansa*, *Das Schiff*, *L'Avenir Militaire*, the *New York Maritime Register*, the *Nautical Gazette* (U.S.), the *Scientific American*, *Forest and Stream*, and the *San Pedro Shipping Gazette*.

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## MARINE INVENTIONS.

*The following list has been compiled for this Journal by Messrs. W. P. Thompson and Boult, British and International Patent and Trade Mark Agents and Consulting Engineers, of* 323, *High Holborn, London, W.C., and* 6, *Lord Street, Liverpool :—*

### PATENTS PUBLISHED.

1130. 10th January, 1884. William Bruce Thompson, of Dundee, in the County of Forfar, North Britain. "Improvements in the construction of iron, steel, and composite ships." This invention relates to improvements in the construction of iron, steel, and composite ships, and consists in constructing the frames of such ships of channel iron or steel, in lieu of the ordinary combination of angle frames and reverse frames, whereby the riveting required for their connection is dispensed with, and, at the same time, a section of iron or steel is provided which is more suitable for allowing the shell riveting to be carried out by machinery. In the construction of the beams of such ships, channel iron is also employed, instead of the ordinary bulb-plate and two-angle irons. The invention is applicable to kelsons also. Instead of channel iron, iron or steel of an H section may be used. Another improvement consists in the employment of edge and edge-shell and deck plating in combination with the above improvements.

5225. 20th March, 1884. Clark (a communication from Aspinwall Fuller and Alexander Hamilton Bell, both of the City and State of New York). "Improvements in marine engine-

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governors." The object of this invention is to provide governors for marine engines which will shut off steam automatically, when the vessel rolls and pitches. The invention consists in a marine engine-governor, constructed with a shell, a two-part spherical valve-seat placed in the shell, and provided with flanges to keep it in place, and with perforations for the passage of steam, and the valve-stem, a spherical valve, provided with perforations for the passage of steam, and a weighted valve-stem to control the valve, and a stuffing-box and flexible connecting base to prevent the steam from escaping round the valve-stem. The two parts of the shell, or case, of the governor, have flanges at their outer ends, for convenience in connecting the said ends with the adjacent flanged ends of a steam-pipe, and the adjacent ends of the parts of the shell are flared into spherical or globular form, and are provided with flanges for convenience in securing the said ends to each other. In the lower side of the shell there is an opening for the passage of the weighted valve-stem; said opening is provided with a fixed collar having a flange at its outer end. Within the shell are placed two semi-spherical plates forming the valve-seat; they have flanges to fit rebated edges in the shell and an opening at their lower side corresponding therewith. A steam space is formed between these plates and the shell. In the centre of one of these halves of the valve-seat there is a large opening, and in the other part are formed a number of small openings. A hollow spherical valve is fitted within the valve-seat provided with openings corresponding to the openings in the valve-seat. A stem is attached to, or formed on the lower side of the valve and passes out through the openings in the seat and shell, and has a weight attached to its lower end. Upon the centre at one side of the valve there is a pin working in a vertical groove in the inner surface of the seat to prevent the valve from rotating. The lower part of the stem goes through a stuffing box.

6503. 5th January, 1884. Stephen Lampard, 57, St. George's Square, Portsea, in the County of Hants, and Victoria Street, Westminster, in the County of Middlesex, Builder and Engineer. "An improved landing-stage and connecting gangway."

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This invention relates to improvements in the arrangement and construction of landing-stages combined with connecting gangways. The connecting or landing-stage has a roadway in the centre for vehicles, and gangways on each side for passengers. There is a pontoon which has a landing prow counterbalanced with winch apparatus for lifting the landing prows so as to be quickly lowered on to the bridge. The passenger gangway or prow is connected with another prow by a chain, and rises and falls with it. There is a connecting gangway or bridge which with the landing prow is attached to a carriage free to move to and fro with the rise and fall of the tide. There are guides between which pass the chains of a floating bridge. Other improvements are also mentioned.

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OFFICIAL RETURN OF BRITISH WRECKS IN OCTOBER, 1884.—The number and tonnage of British vessels, respecting whose loss reports were received at the Board of Trade during the month of October, 1884, and the number of lives lost are as follow :—

| Description. | Number. | Tonnage. | Lives lost. |
|---|---|---|---|
| Sailing ..... | 91 | 18,229 | 75 |
| Steam ..... | 24 | 17,381 | 44 |
| Total ..... | 115 | 35,610 | 119 |

The above table is a record of "reports received" in the month, and not of wrecks which occurred during the month. Many of the reports received in October relate to casualties which occurred in previous months. Casualties not resulting in total loss of vessels, and the lives lost by such casualties are not included.—THOMAS GRAY, Assistant-Secretary, Marine Department.—Board of Trade, 1st November, 1884.

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# TIDE TABLES FOR DECEMBER, 1884.

*Also Ports of Reference for the Constants in the next Table.*

| Week Day. | Month Day. | London Bridge | | Hull. | | North Shields | | Leith. | | Devonport. | | Dover. | | Weston Super-mare. | | Liverpool. | | Greenock | | Queenstown | | Kingstown. | | Londonderry. | | Brest. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| | | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. | H. M. |
| M | 1 | — | 0 24 | 4 34 | 4 58 | 1 34 | 1 58 | 0 28 | 0 52 | 3 47 | 4 13 | 9 15 | 9 41 | 4 53 | 5 22 | 9 31 | 9 55 | 10 13 | 10 39 | 8 6 | 8 32 | 9 26 | 9 50 | 6 12 | 6 37 | 1 57 | 2 21 |
| Tu | 2 | 0 48 | 1 12 | 5 22 | 5 47 | 2 21 | 2 43 | 1 16 | 1 40 | 4 39 | 5 5 | 10 7 | 10 33 | 5 50 | 6 17 | 10 19 | 10 44 | 11 5 | 11 31 | 8 58 | 9 24 | 10 12 | 10 34 | 7 2 | 7 27 | 2 45 | 3 9 |
| W | 3 | 1 37 | 2 2 | 6 12 | 6 37 | 3 6 | 3 30 | 2 4 | 2 28 | 5 31 | 5 56 | 11 0 | 11 27 | 6 4 | 7 10 | 11 9 | 11 34 | 11 57 | — | 4 50 | 5 16 | 10 58 | 11 23 | 7 51 | 8 14 | 3 33 | 3 58 |
| Th | 4 | 2 26 | 2 50 | 7 2 | 7 27 | 3 55 | 4 20 | 2 52 | 3 16 | 6 21 | 6 46 | 11 54 | — | 7 35 | 7 59 | — | noon | 0 23 | 0 49 | 5 42 | 6 7 | 11 48 | — | 8 37 | 9 0 | 4 23 | 4 48 |
| F | 5 | 3 14 | 3 40 | 7 52 | 8 17 | 4 45 | 5 10 | 3 40 | 4 4 | 7 9 | 7 32 | 0 21 | 0 48 | 8 23 | 8 46 | 0 25 | 0 50 | 1 14 | 1 39 | 6 32 | 6 57 | 0 13 | 0 39 | 9 23 | 9 47 | 5 18 | 5 38 |
| S | 6 | 4 5 | 4 29 | 8 42 | 9 8 | 5 36 | 6 3 | 4 50 | 4 57 | 7 56 | 8 20 | 1 15 | 1 42 | 9 9 | 9 32 | 1 15 | 1 40 | 2 4 | 2 29 | 7 22 | 7 47 | 1 5 | 1 32 | 10 12 | 10 38 | 6 3 | 6 28 |
| S | 7 | 4 54 | 5 19 | 9 34 | 10 0 | 6 30 | 6 57 | 5 24 | 5 52 | 8 48 | 9 6 | 2 9 | 2 35 | 9 54 | 10 15 | 2 5 | 2 29 | 2 54 | 3 18 | 8 11 | 8 34 | 1 59 | 2 26 | 11 6 | 11 37 | 6 53 | 7 19 |
| M | 8 | 5 44 | 6 12 | 10 26 | 10 54 | 7 24 | 7 52 | 6 20 | 6 49 | 9 30 | 9 54 | 3 0 | 3 25 | 10 36 | 10 58 | 2 58 | 3 19 | 3 42 | 4 8 | 8 57 | 9 22 | 2 53 | 3 20 | — | 0 11 | 7 46 | 8 13 |
| Tu | 9 | 6 37 | 7 5 | 11 26 | mid. | 8 22 | 8 55 | 7 19 | 7 51 | 10 20 | 10 47 | 3 50 | 4 15 | 11 22 | 11 49 | 3 46 | 4 15 | 4 34 | 5 1 | 9 47 | 10 15 | 3 49 | 4 20 | 0 49 | 1 28 | 8 40 | 9 9 |
| W | 10 | 7 33 | 8 3 | — | 0 33 | 9 30 | 10 5 | 8 24 | 8 58 | 11 16 | 11 49 | 4 41 | 5 9 | — | 0 20 | 4 46 | 5 21 | 5 30 | 6 1 | 10 46 | 11 19 | 4 52 | 5 25 | 2 6 | 2 43 | 9 42 | 10 18 |
| Th | 11 | 8 35 | 9 11 | 1 5 | 1 36 | 10 39 | 11 13 | 9 33 | 10 7 | — | 0 24 | 5 39 | 6 11 | 0 53 | 1 29 | 6 0 | 6 38 | 6 34 | 7 8 | 11 54 | — | 5 57 | 6 28 | 3 16 | 3 46 | 10 55 | 11 30 |
| F | 12 | 9 47 | 10 23 | 2 7 | 2 38 | 11 45 | — | 10 39 | 11 8 | 1 0 | 1 35 | 6 44 | 7 17 | 2 4 | 2 38 | 7 12 | 7 44 | 7 42 | 8 15 | 0 28 | 1 2 | 6 59 | 7 29 | 4 14 | 4 39 | — | 0 4 |
| S | 13 | 10 55 | 11 27 | 3 9 | 3 39 | 0 15 | 0 43 | 11 36 | — | 2 9 | 2 39 | 7 49 | 8 19 | 3 12 | 3 45 | 8 14 | 8 41 | 8 46 | 9 15 | 1 35 | 2 6 | 7 59 | 8 28 | 5 2 | 5 24 | 0 35 | 1 3 |
| S | 14 | 11 54 | — | 4 7 | 4 32 | 1 8 | 1 32 | 0 2 | 0 26 | 3 7 | 3 33 | 8 45 | 9 9 | 4 16 | 4 45 | 9 5 | 9 27 | 9 42 | 10 7 | 2 34 | 2 59 | 8 55 | 9 20 | 5 46 | 6 7 | 1 29 | 1 52 |
| M | 15 | 0 19 | 0 42 | 4 55 | 5 15 | 1 54 | 2 18 | 0 48 | 1 8 | 3 57 | 4 20 | 9 31 | 9 52 | 5 10 | 5 38 | 9 47 | 10 6 | 10 29 | 10 50 | 3 22 | 3 43 | 9 41 | 10 1 | 6 27 | 6 47 | 2 12 | 2 32 |
| Tu | 16 | 1 4 | 1 25 | 5 34 | 5 53 | 2 32 | 2 50 | 1 28 | 1 47 | 4 41 | 5 1 | 10 18 | 10 33 | 5 55 | 6 16 | 10 25 | 10 44 | 11 10 | 11 30 | 4 3 | 4 23 | 10 19 | 10 36 | 7 7 | 7 27 | 2 51 | 3 9 |
| W | 17 | 1 45 | 2 4 | 6 12 | 6 31 | 3 8 | 3 25 | 2 5 | 2 23 | 5 26 | 5 46 | 10 53 | 11 13 | 6 36 | 6 55 | 11 2 | 11 20 | 11 50 | — | 4 42 | 5 1 | 10 53 | 11 10 | 7 46 | 8 8 | 3 27 | 3 45 |
| Th | 18 | 2 21 | 2 37 | 6 49 | 7 7 | 3 42 | 3 59 | 2 40 | 2 56 | 5 56 | 6 13 | 11 32 | 11 51 | 7 13 | 7 30 | 11 38 | 11 56 | 0 9 | 0 27 | 5 19 | 5 37 | 11 27 | 11 44 | 8 19 | 8 34 | 4 3 | 4 20 |
| F | 19 | 2 52 | 3 10 | 7 25 | 7 42 | 4 16 | 4 33 | 3 12 | 3 28 | 6 30 | 6 46 | — | 0 10 | 7 47 | 8 4 | — | 0 18 | 0 45 | 1 3 | 5 55 | 6 13 | — | 0 1 | 8 49 | 9 5 | 4 37 | 4 54 |
| S | 20 | 3 26 | 3 45 | 7 59 | 8 16 | 4 50 | 5 7 | 3 45 | 4 2 | 7 1 | 7 16 | 0 28 | 0 46 | 8 20 | 8 36 | 0 30 | 0 47 | 1 20 | 1 36 | 6 30 | 6 46 | 0 18 | 0 36 | 9 21 | 9 37 | 5 10 | 5 26 |
| S | 21 | 4 1 | 4 17 | 8 32 | 8 49 | 5 25 | 5 43 | 4 20 | 4 38 | 7 32 | 7 49 | 1 5 | 1 24 | 8 52 | 9 9 | 1 4 | 1 21 | 1 53 | 2 10 | 7 8 | 7 21 | 0 54 | 1 12 | 9 53 | 10 10 | 5 43 | 6 2 |
| M | 22 | 4 35 | 4 53 | 9 7 | 9 26 | 6 2 | 6 22 | 4 57 | 5 17 | 8 6 | 8 23 | 1 43 | 2 2 | 9 26 | 9 43 | 1 39 | 1 57 | 2 28 | 2 46 | 7 39 | 7 57 | 1 31 | 1 51 | 10 29 | 10 50 | 6 21 | 6 40 |
| Tu | 23 | 5 10 | 5 29 | 9 46 | 10 6 | 6 42 | 7 3 | 5 38 | 5 59 | 8 40 | 8 58 | 2 22 | 2 42 | 10 0 | 10 17 | 2 16 | 2 35 | 3 5 | 3 24 | 8 15 | 8 34 | 2 11 | 2 32 | 11 18 | 11 39 | 6 59 | 7 20 |
| W | 24 | 5 49 | 6 12 | 10 28 | 10 52 | 7 25 | 7 50 | 6 21 | 6 45 | 9 19 | 9 43 | 3 2 | 3 28 | 10 34 | 10 58 | 2 55 | 3 17 | 3 44 | 4 6 | 8 55 | 9 17 | 2 54 | 3 18 | — | 0 8 | 7 43 | 8 8 |
| Th | 25 | 6 34 | 6 59 | 11 20 | 11 50 | 8 18 | 8 48 | 7 12 | 7 42 | 10 8 | 10 35 | 3 46 | 4 10 | 11 15 | 11 41 | 3 41 | 4 8 | 4 29 | 4 54 | 9 40 | 10 6 | 3 44 | 4 12 | 0 41 | 1 16 | 8 34 | 9 2 |
| F | 26 | 7 27 | 7 57 | — | 0 22 | 9 20 | 9 54 | 8 14 | 8 48 | 11 5 | 11 39 | 4 35 | 5 2 | — | 0 11 | 4 38 | 5 12 | 5 23 | 5 52 | 10 36 | 11 10 | 4 43 | 5 15 | 1 54 | 2 31 | 9 32 | 10 5 |
| S | 27 | 8 29 | 9 1 | 0 55 | 1 28 | 10 30 | 11 5 | 9 24 | 9 59 | — | 0 16 | 5 31 | 6 3 | 0 44 | 1 19 | 5 49 | 6 28 | 6 25 | 6 59 | 11 45 | — | 5 48 | 6 21 | 3 7 | 3 40 | 10 43 | 11 22 |
| M | 28 | 9 41 | 10 15 | 2 1 | 2 34 | 11 40 | — | 10 38 | 11 6 | 0 54 | 1 33 | 6 37 | 7 13 | 1 57 | 2 35 | 7 5 | 7 41 | 7 35 | 8 12 | 0 21 | 0 58 | 6 54 | 7 27 | 4 10 | 4 38 | — | noon |
| Tu | 29 | 10 50 | 11 23 | 3 7 | 3 40 | 0 18 | 0 44 | 11 37 | — | 2 11 | 2 47 | 7 49 | 8 22 | 3 13 | 3 49 | 8 14 | 8 43 | 8 47 | 9 19 | 1 35 | 2 10 | 8 0 | 8 31 | 5 8 | 5 28 | 0 35 | 1 7 |
| W | 30 | 11 55 | — | 4 10 | 4 39 | 1 12 | 1 38 | 0 5 | 0 32 | 3 20 | 3 51 | 8 51 | 9 20 | 4 24 | 4 58 | 9 11 | 9 38 | 9 49 | 10 18 | 2 42 | 3 12 | 9 2 | 9 31 | 5 53 | 6 19 | 1 36 | 2 3 |
| Th | 31 | 0 26 | 0 52 | 5 6 | 5 33 | 2 4 | 2 29 | 0 59 | 1 25 | 4 20 | 4 49 | 9 49 | 10 18 | 5 30 | 6 0 | 10 4 | 10 30 | 10 47 | 11 15 | 3 41 | 4 9 | 9 57 | 10 22 | 6 45 | 7 12 | 2 29 | 2 55 |



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# TIDAL CONSTANTS

## For Various British, Irish, and European Ports.

By applying the Tidal Constant of the place, according to its sign (+ *add* — *sub.*), to the time of high water on the given day at the port of reference, you have the time of high water at the place sought.

| Place. | Constant. | Port of Reference. |
|---|---|---|
| | H. M. | |
| Aberdeen | −1 17 | Leith |
| Aberystwyth | −3 52 | Liverpool |
| Alderney | +2 59 | Brest |
| Antwerp | +5 13 | Dover |
| Arbroath | −0 42 | Leith |
| Arcachon | +0 50 | Brest |
| Arklow | −2 25 | Kingstown |
| Ayr | −0 18 | Greenock |
| Banff | −1 49 | Leith |
| Bantry harbour | −1 14 | Queenstown |
| Barnstaple bridge | −0 26 | Weston-s.-Mare |
| Bayonne | −0 2 | Brest |
| Beachy head & Rye bay | +0 8 | Dover |
| Beaumaris | −0 51 | Liverpool |
| Belfast | +2 42 | Londonderry |
| Berwick | −1 5 | N. Shields |
| Blyth | −0 8 | N. Shields |
| Bordeaux | +3 3 | Brest |
| Boulogne | +0 13 | Dover |
| Bridport | +0 22 | Devonport |
| Bristol & King Road | +0 19 | Weston-s.-Mare |
| Cadix | −2 2 | Brest |
| Caernarvon | −1 56 | Liverpool |
| Calais | +0 37 | Dover |
| Campbellton | −0 28 | Greenock |
| Cardiff | +0 2 | Weston-s.-Mare |
| Cardigan bar | −4 22 | Liverpool |
| Carlingford bar | −0 10 | Kingstown |
| Chatham | −0 47 | London |
| Cherbourg | +4 2 | Brest |
| Coleraine | −1 37 | Londonderry |
| Coquet Road | −0 28 | N. Shields |
| Cordouan Tower | −0 10 | Brest |
| Cowes (West) | −0 27 | Dover |
| Crinan | +4 41 | Greenock |
| Cromarty | −2 21 | Leith |
| Dartmouth | +0 33 | Devonport |
| Deal & Downs | +0 8 | Dover |
| Dieppe | +7 19 | Brest |
| Donaghadee | +0 3 | Kingstown |
| Donegal harbour | +0 17 | Queenstown |
| Douglas & Ramsay | −0 11 | Liverpool |
| Dublin bar | +0 2 | Kingstown |
| Dundalk | −0 16 | Kingstown |
| Dungeness | −0 27 | Dover |
| Dunkerque | +0 56 | Dover |
| Exmouth | +0 38 | Devonport |
| Falmouth | −0 46 | Devonport |
| Fecamp | +6 57 | Brest |
| Ferrol | −0 47 | Brest |
| Flamborough head | −1 59 | Hull |
| Fleetwood | −0 12 | Liverpool |
| Folkestone | −0 5 | Dover |
| Fowey | −0 29 | Devonport |
| Flushing | +1 42 | Dover |
| Galway bay | −0 26 | Queenstown |
| Gibraltar | −1 27 | Brest |
| Glasgow (Port) | +0 10 | Greenock |
| Gloucester | +2 51 | Weston-s.-Mare |
| Granville | +0 26 | Brest |
| Gravesend | −0 48 | London |
| Grimsby (Great) | −0 58 | Hull |
| Guernsey (St. Peter) | +2 50 | Brest |
| Hartlepool | +0 5 | N. Shields |
| Harwich | −1 52 | London |
| Havre | +6 4 | Brest |
| Helgoland | +0 21 | Dover |
| Holyhead | −1 12 | Liverpool |
| Holy Island harbour | −0 53 | N. Shields |
| Honfleur | +5 42 | Brest |
| Inverness | −1 59 | Leith |
| Jersey (St. Helier) | +2 38 | Brest |
| Kinsale | −0 18 | Queenstown |
| Lerwick (Shetland) | −3 47 | Leith |
| Limerick | +1 15 | Queenstown |
| Lisbon Bar | −1 17 | Brest |
| Littlehampton | +0 24 | Dover |
| Llanelly bar | −0 38 | Weston-s.-Mare |
| Lowestoft | −4 1 | London |
| Lynn & Boston Deep | −0 29 | Hull |
| Margate | −2 18 | London |
| Maryport | +0 8 | Liverpool |
| Milford Haven entr. | −0 58 | Weston-s.-Mare |
| Montrose | −0 52 | Leith |
| Morlaix | +1 6 | Brest |
| Needles point | −1 26 | Dover |
| Newcastle | +0 23 | N. Shields |
| Newhaven | +0 39 | Dover |
| Newport | +0 16 | Weston-s.-Mare |
| Nieuport | +1 6 | Dover |
| Nore | −1 28 | London |
| Orfordness | −2 43 | London |
| Oporto | −1 17 | Brest |
| Ostende | +1 18 | Dover |
| Padstow | −1 41 | Weston-s.-Mare |
| Peel, Isle of Man | −0 15 | Liverpool |
| Pembroke Dock | −0 42 | Weston-s.-Mare |
| Penzance | −1 18 | Devonport |
| Peterhead | −1 48 | Leith |
| Piel harbour, Barrow | −0 18 | Liverpool |
| Plymouth breakwater | −0 6 | Devonport |
| Poole | −2 2 | Dover |
| Port Carlisle | +0 47 | Liverpool |
| Portland breakwater | +1 18 | Devonport |
| Port Patrick | −0 58 | Greenock |
| Portsmouth | +0 29 | Dover |
| Ramsgate | −2 19 | London |
| Rotterdam | +4 33 | Dover |
| Santander | −0 17 | Brest |
| Scarborough | +0 48 | N. Shields |
| Selsea bill | +0 33 | Dover |
| Sheerness | −1 21 | London |
| Shoreham | +0 22 | Dover |
| Sligo bay | +0 17 | Queenstown |
| Southampton | −0 42 | Dover |
| Spurn point | −1 8 | Hull |
| St. Ives | −2 10 | Weston-s.-Mare |
| St. Malo | +2 18 | Brest |
| St. Mary (Scilly) | −1 16 | Devonport |
| St. Nazaire | −0 7 | Brest |
| Stornoway | +6 38 | Greenock |
| Stromness (Orkneys) | −5 17 | Leith |
| Sunderland | −0 ·1 | N. Shields |
| Swansea bay | −0 53 | Weston-s.-Mare |
| Tay bar | −0 11 | Leith |
| Tees bar | +0 23 | N. Shields |
| Tenby | −1 12 | Weston-s.-Mare |
| Thurso | −5 49 | Leith |
| Torbay | +0 17 | Devonport |
| Tralee bay | −0 58 | Queenstown |
| Ushant (Ouessant) | −0 15 | Brest |
| Valentia harbour | −1 19 | Queenstown |
| Waterford | +0 19 | Queenstown |
| Westport | −0 4 | Queenstown |
| Wexford | +2 20 | Queenstown |
| Whitby | +0 22 | N. Shields |
| Whitehaven | −0 9 | Liverpool |
| Wick | −2 55 | Leith |
| Wicklow | −0 41 | Kingstown |
| Workington | −0 19 | Liverpool |
| Yarmouth road | −4 43 | London |
| Youghall | +0 18 | Queenstown |

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## MONTHLY ABSTRACT OF NAUTICAL NOTICES.

| No. | Place. | Subject. |
|---|---|---|
| 383 | England — River Thames Entrance — Duke of Edinburgh Channel | Buoyage altered. |
| 384 | „ Goodwin Sands—South Sand Head Light-vessel | Light altered in character. |
| 385 | „ East Coast — Harwich Approach | New buoy. |
| 386 | „ „ Yarmouth District | Alteration in buoyage. |
| 387 | Ireland—East Coast — Belfast Lough Entrance | Mew Island, new light and fog-signal; Copeland light and fog-signal discontinued. |
| 388 | „ South Coast—Cork Harbour Entrance—Chicago Knoll | New buoy. |
| 389 | North Sea—Weser River Light-vessel | Alteration in fog-signals. |
| 390 | „ Elbe River—Cuxhaven | Arc of low light. |
| 391 | Norway—West and North Coasts—Gi Sund and Vardö Bay | New lights. |
| 392 | Baltic Entrance—Skagerrack—Sweden Bohus Bay | Various new lights. |
| 393 | „ Kattegat — Sweden—Winga Island | Temporary alteration in fog-signal. |
| 394 | „ „ Warberg | West mole light altered. |
| 395 | „ „ Hallands Wäderö | New light. |
| 396 | „ „ Graen Holm | New light. |
| 397 | „ „ Marstrand to Goteborg | Various new lights. |
| 398 | „ „ „ Ram Head | New light. |
| 399 | „ The Sound—Barsebak | New light. |
| 400 | „ „ Hoganœs | Alteration in lights. |
| 401 | „ Belts and Sound | Danish system of buoyage. |
| 402 | „ Kattegat—Lœso Channel Light-vessel | Fog-signal altered. |
| 403 | Baltic—Kalmar Sound—Grimskär | New fog-horn. |
| 404 | „ Stockholm Approach — Sandö Channel—Stalbadan | Automatic signal-buoy. |
| 405 | „ Westerwik Approaches | New lights. |
| 406 | „ Gulf of Finland | Various new lights. |
| 407 | „ „ Dalskär | New light. |
| 408 | „ „ Biorkö Sund — Verko Matala Ground | New light-vessel with fog-signal. |
| 409 | „ Gulf of Bothnia—Malmö Island | New light. |
| 410 | „ „ Holmo—Berg Point | New light. |
| 411 | „ „ Raumo—Valkiakaro Islet | New light. |
| 412 | „ „ Rafso Fiard —Kallo Islet | New lights. |
| 413 | Mediterranean—Spain—Port Aguilas | Light on breakwater. |
| 414 | „ France—Agay Road—Baumette Point | New light. |
| 415 | „ Marocco—Zafarin Islands—Isabel Segunda Island | New light. |

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MONTHLY ABSTRACT OF NAUTICAL NOTICES—*continued.*

| No. | PLACE. | SUBJECT. |
|---|---|---|
| 416 | MEDITERRANEAN—Italy—Capri Island | Telegraph cable. |
| 417 | „ „ Ischia—Imperatore Point | New light. |
| 418 | „ „ Gulf of Taranto—Port Cotrone | Alterations in harbour light. |
| 419 | „ Adriatic—Port Makarska—St. Pietro Peninsula | New light. |
| 420 | „ „ Vodice | New harbour light. |
| 421 | „ „ Petercane | New harbour light. |
| 422 | BLACK SEA—Kertch Strait Entrance | Shoal formed. |
| 423 | „ Kherson Bay — Fort Nicolaevski | Arcs of visibility in leading lights. |
| 424 | NORTH ATLANTIC—Cape Verde Islands—St. Vincent Island—Porto Grande | Buoys marking telegraph cables. |
| 425 | CHINA SEA—Pulo Condore Group—Haon Bai Kan Island | Intended light. |
| 426 | CHINA—East Coast—Yung, Wusung and Canton Rivers | Are now partially blocked. |
| 427 | JAPAN — Kiusiu — Oshima — Kura Saki Hana | New light. |
| 428 | RUSSIAN TARTARY—Peter the Great Bay—Skrypleff Island | New leading light. |
| 429 | AUSTRALIA—East Coast—Double Island Point | New light. |
| 430 | „ „ Pioneer River Entrance—East Point | New leading lights. |
| 431 | „ South Coast—Bass Strait—Seal Islands—Cliffy Island | New light. |
| 432 | NEW ZEALAND—North Island—Kaipara Harbour | Intended light. |
| 433 | „ „ Bay of Islands—Waimangaroa Point | New light. |
| 434 | „ „ Middle Island—Massacre Bay—Port Waitapu | New leading lights. |
| 435 | UNITED STATES—New York—Hell Gate | Electric light shown. |
| 436 | GULF OF ST. LAWRENCE—Cape Breton Island—Barra Strait—Piper Cove | New light. |
| 437 | „ „ Boulardrie Island—McNeills Beach | New light. |

## NAUTICAL NOTICES.

*All Bearings Magnetic, unless otherwise stated.*

383.—ENGLAND.—*Entrance to River Thames.—Alteration and Addition to the Buoyage of the Duke of Edinburgh Channel.*—With reference to previous Notice, the buoyage in the Duke of Edinburgh channel has been altered in the following manner, viz.: —The *Knob* buoy has been moved 3 cables S.W. of its former position to cover a patch of 26 feet: it lies in 5¼ fathoms at low water spring tides, with the following marks and bearings,

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viz.: East Oaze buoy, W. by N. ½ N. Nly., distant 2 4/10ths miles; Mouse light-vessel, N.W. by W., distant 4 miles; North Knob buoy, N.W. by N., distant 1 3/10ths mile; East Knob buoy, E. ¾ N. Nly., distant 1 7/10ths mile; North Shingles buoy, East, distant 5 3/10ths miles; West Mid Shingles buoy, E. ¾ S., distant 2 9/10ths miles; North West Shingles buoy, S.E. by E. ¼ E., distant 1 7/10ths mile; Girdler light-vessel, S. by W., distant 1 8/10ths mile; Shivering Sand buoy, S.W. ½ W., distant 1 mile.

The *Mid Shingles* buoy has been moved 4 cables W. ¾ S., and changed from black and white chequered to black and white vertical stripes, and called *West Mid Shingles;* it lies in 8 fathoms at low water spring tides, with the following marks and bearings, viz.:—Knob buoy, W. ¾ N., distant 2 9/10ths miles; East Knob buoy, N.W. by W. ¼ W., distant 1 3/10ths mile; Knock John buoy, N. by E. ½ E., distant 1 1/10th of a mile; Mid Shingles buoy, E. ¾ N., distant 1 2/10ths mile; Shivering Sand buoy, W. ¼ S. Sly., distant 3 6/10ths miles. A new buoy (can), black and white chequered, has been placed midway between West Mid Shingles (*in new position*) and North Shingles, and called the *Mid Shingles:* it lies in 6¼ fathoms low water spring tides, with the following marks and bearings, viz.:—Knob buoy, W. ¼ N., distant 4 miles; Knock John buoy, N.W., distant 1 2/10ths mile; East Knock John buoy, N.N.E. ¼ E., distant 1 mile; North Shingles buoy, E. ¾ N., distant 1 2/10ths mile; West Mid Shingles buoy, W. ¾ S., distant 1 3/10ths mile.

A new buoy (conical black), called *East Knob*, has been placed on the north side of the Channel, and now lies in 6¼ fathoms low water spring tides, with the following marks and bearings, viz.:—Pansand beacon, in line with Reculvers, S. ¼ W.; Knob buoy, W. ¾ S. Sly., distant 1 7/10ths mile; Knock John buoy, E. by N. Nly., distant 1 5/10ths mile; North Shingles buoy, E. ¼ S. distant 3 5/10ths miles; West Mid Shingles buoy, S.E. by E. ¼ E., distant 1 3/10ths mile; North West Shingles buoy, S. by W., distant 1 2/10ths mile; Shivering Sand buoy, W. by S. ¾ S., distant 2 6/10ths miles.

A new buoy (conical black, surmounted with staff and globe), called *East Knock John*, has also been placed on the north side of the Channel, midway between West Long sand and Knock John

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buoys, and now lies in 9¼ fathoms low water spring tides, with the following marks and bearings, viz. :—S.E. Shingles beacon, in line with Margate new church, S. by E. ½ E.; Knock John buoy, W. ½ S., distant 1$\frac{3}{10}$ths mile; West Long Sand buoy, E. ½ N., distant 1$\frac{3}{10}$ths mile; North Shingles buoy, S.E. ½ S., distant 1 mile; Mid Shingles buoy, S.S.W. ¾ W., distant 1 mile. *Variation*, 17¼° *W.*

384.—ENGLAND.—*Goodwin Sands.—South Sand Head Light-Vessel.—Alteration in Character of Light.*—With reference to previous Notice, the character of the South Sand Head light has been altered from fixed to *double-flashing every half-minute*, showing two successive flashes, one short, one long, in the manner following, viz. :—A flash of 1½ seconds, an eclipse of 6 seconds, and a flash of 5 seconds, and an eclipse of 17½ seconds. The character of the fog-horn will remain as before, viz., 3 blasts in quick succession every two minutes; the first blast a low note, the second a high note, and the third a low note.

385.—ENGLAND.—*East Coast.—Approaches to Harwich.—New Buoy.*—A new buoy (cylinder), black and white stripes, called *N.W. Shipwash*, has been placed nearly midway between Shipwash light-vessel and Mid Shipwash buoy, and lies in 8 fathoms low water spring tides, with the following bearings, viz. :—Shipwash light-vessel, N.N.E. ½ E., distant 2 miles; Middle Shipwash buoy, S.W. ¾ S., distant 2 miles; N.E. Bawdsey, N. by W. ¾ W., distant 2$\frac{1}{10}$ths miles; S.W. Bawdsey, W. ½ S., distant 3$\frac{1}{10}$th miles.

386.—ENGLAND.—*East Coast.—Yarmouth District.—Alteration in Buoyage.*—The *N.E. Corton* buoy has been moved 4 cables N. ½ E., and now lies in 25 feet low water spring tides, with the following marks and bearings, viz. :—St. Nicholas church at Yarmouth just open eastward of Yarmouth jetty, N. by W. $\frac{3}{4}$ W.; a small watch-house on the Denes, just open northward of North pier-head at Yarmouth haven, N.W. $\frac{3}{4}$ W.; St. Nicholas light-vessel, N. by W., distant 1½ mile; South Scroby spit buoy, N. ½ E., distant $\frac{9}{10}$ths of a mile; Scroby Hook buoy, E.N.E., distant $\frac{3}{10}$ths of a mile; South Scroby buoy, S.S.E. ¾ E., distant 1 mile; Corton light-vessel, S. by E. ½ E., distant 2¾ miles.

The *North Holm* buoy has been moved 2½ cables N. by E. ½ E.,

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and now lies in 5 fathoms low water spring tides, with the following marks and bearings, viz. :—Gorleston church tower, its width eastward of Gorleston South mill, N. ¼ W.; Lowestoft low light-house, just touching the east end of the house on Lowestoft north ness, S.S.W. ¼ W.; Holm End buoy, S.S.E., distant $\frac{8}{10}$ths of a mile; North Newcome spit buoy, S. ¼ W., distant 2 miles; St. Nicholas light-vessel, N. by E. ½ E., distant 4¼ miles; S.W. Corton buoy, N.N.E. ¾ E., distant $1\frac{1}{10}$th mile.

The *North Caistor* buoy has been moved 1 cable eastward, and now lies in 12 fathoms low water spring tides, with the following marks and bearings, viz. :—Hemesby church, in line with the middle of the Scratby houses, N.W. ½ N.; Yarmouth town hall cupola, its breadth open eastward of St. Nicholas church tower, S.W. ¾ S.; West Cockle spit buoy, N.N.W. ¼ W., distant 1½ mile; Cockle light-vessel, N.E. by N., distant $1\frac{3}{10}$ths mile; Scroby bell buoy, S.Wly., distant 2 miles; Caistor elbow buoy, S. by W. ¼ W., distant $\frac{8}{10}$ths of a mile.

387.—IRELAND.—*East Coast.—Belfast Lough Entrance.—Group Flashing Light and Fog-Signal on Mew Island; also, Discontinuance of Copeland Light and Fog-Signal.*—With reference to previous Notices on the intended establishment of a light and fog-signal on Mew island; also, of the intended discontinuance of the light and fog-signal on Lighthouse or Copeland island :—On 1st November, 1884, the light and fog-signal were established on Mew island, and the light and fog-signal on Copeland island discontinued. The light is a *group flashing* white light, showing a group of *four flashes in quick succession every minute.* The group of flashes occupies *about twenty-two seconds* (each flash lasting *about four seconds*, and the eclipse *about one and three-quarter seconds*); the interval between each successive group of four flashes occupies *about thirty-eight seconds.* The light is visible in all directions except where obscured by Copeland islands; elevated 121 feet above the sea, and should be seen from a distance of 16 miles. The lighthouse, gray in colour, is situated on the extreme eastern point of Mew island. Position, lat. 54° 41′ 50″ N., long. 5° 31′ 30″ W.

*Note.*—During the interval between each group, weak reflected flashes may be observed.

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*Fog-Signal.*—The signal is a siren, which, during thick or foggy weather will give a blast of *four seconds'* duration *on a low note*, followed after an interval of silence of *twelve seconds* by a second blast of *four seconds on a higher note*, succeeded by a silent interval of *one hundred seconds*.

388.—IRELAND.—*South Coast.—Cork Harbour Entrance.—Buoy Marking Chicago Knoll.*—Placed about a quarter of a cable southward of Chicago knoll eastern side of entrance to Queenstown harbour :—The buoy, conical and black, with the words *Chicago knoll* painted on it, is moored in 28 feet at low water spring tides, with the following bearings and distance :—Dogsnose point, N. 14° E.; Roche point lighthouse, S. 40° E.; East Harbour rock buoy, N. 38½° W., distant 1½ cable; Ram point, N. 12° W.

*Note.*—Chicago knoll, on which the steam-vessel *Chicago* grounded, is composed of rock, and has 21 feet on it at low water spring tides. The fairway course through the eastern channel lies midway between Chicago knoll buoy and East Harbour rock buoy. *Variation*, 22¾° *W.*

389.—NORTH SEA.—*Weser River Entrance.—Weser Light-Vessel.—Alteration in Fog-Signals.*—A steam fog-horn has been established on board Weser light-vessel, Weser river entrance; and during thick or foggy weather the following signals will be given :—The fog-horn will be sounded for a period of *twenty seconds* in *every minute*, the intervals between the signals being *forty seconds*. The fog-bell will be struck loudly *five* times at short intervals, in each group of the signals.

390.—NORTH SEA.—*Elbe River.—Cuxhaven Low Light.—Arc of Visibility.*—The sector of the low light at Cuxhaven has been altered so as to be visible between the bearings of S. ⅞ E., and S. ¼ W., or from about 4° eastward of black buoy L to about white buoy No. 10. *Variation*, 13¾° *W.*

391.—NORWAY.—*West and North Coasts.*—During the autumn of 1884 the following lights will be exhibited on the west and north coasts of Norway :—

(1.) *Gi Sund.—Leading Lights.*—Two leading lights will be exhibited at Finsnœs, east side of southern entrance to Gi sund; position approximate, lat. 69° 14′ N., long. 17° 58¼′ E. Two

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leading lights will be exhibited at Bukkeskind, eastern shore of Gi sund; position approximate, lat. 69° 21½′ N., long. 18° 6½′ E.

*Note.*—These lights are so placed, that each pair kept in line, will lead between Leikness islands and the shoals lying northward and westward of those islands.

(2.) *Vardö Bay.—Light in Vest Vaagen.*—A *fixed* light will be exhibited from the extremity of the newly completed western breakwater in Vest Vaagen, Vardö bay, showing *white* between the bearings of S. by E. (leading one cable eastward of Svinö, and close eastward of Tofteskitten ground) and S. ½ W. (leading well westward of Renö Skier); and *red* from the bearing of S. ½ W. to about S.S.W. Position approximate, lat. 70° 22′ N., long. 31° 8½′ E. *Variation*, ½° *E.*

392.—Baltic Entrance.—*The Skagerrak.—Sweden.—Bohus Bay.*—(1) *Light on Tjurholm.*—On 27th October, 1884, a light would be exhibited from a lighthouse erected on the eastern side of Tjurholm, approach to Dynekilen. It is a *fixed white* light, elevated 52 feet above the sea, and visible from a distance of about 5 miles. The lighthouse, 11 feet high, is white in colour. Position, lat. 58° 59′ N., long. 11° 6¼′ E.

(2.) *Leading Lights on Käbblingarne and Likholm.*—Also, two leading lights would be exhibited—the south-western light on Käbblingarne, the north-eastern light on Likholm—which, kept in line, lead from Koster fiord to the entrance to Strömstad. South Käbblingarne light is a *fixed white* light, elevated 16 feet above the sea, and visible from a distance of about 5 miles. The lighthouse, 12 feet high, is white in colour. Position, lat. 58° 54¾′ N., long. 11° 5¾′ E. Likholm light is a *fixed white* light, elevated 27 feet above the sea, and visible from a distance of about 5 miles; the lighthouse, 11 feet high, is white in colour. Position, lat. 58° 55½′ N., long. 11° 6¾′ E.; these leading lights will be exhibited annually from 1st August to 1st May.

(3.) *Leading Lights on Bissen Holm.*—Also, two leading lights would be exhibited on the S.W. side of Bissen Holm, which, kept in line, indicate the fairway of the channel between Klippa and Svartskären:—The south light is a *fixed white* light, elevated 43 feet above the sea, and visible from a distance of about 5 miles;

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the lighthouse, 12 feet high, is white in colour. Position, lat. 58° 48¼′ N., long. 11° 10′ E. The North light, distant 26 yards from the south light, is an *alternating white and red* light, elevated 24 feet above the sea, and visible, the white light from a distance of about 5 miles, the red light from a distance of 3 miles; the lighthouse, 21 feet high, is white in colour; these leading lights will be exhibited annually from 1st August to 1st May.

*Note.*—The above lights *are not constantly attended to.* The illuminating apparatus is dioptric, or by lenses, of the sixth order.

393.—Baltic Entrance.—*The Kattegat. — Sweden. — Winga Island.—Temporary Alteration in Fog-Signal.*—The Swedish Government has given Notice, dated 24th September, 1884, that the siren at Winga island, Winga sound, having been destroyed by fire, the following alteration will be made in the fog-signal until further notice:—During thick or foggy weather, two guns will be fired *every fifteen minutes.*

394.—Baltic Entrance. — *Kattegat. —Sweden. — Warberg.— Alterations in West Mole Light.*—On 1st October, 1884, a new harbour light would be exhibited (in lieu of the old light) from a lighthouse 24 feet high, on the extremity of the prolongation of the west mole at Warberg:—It is a *flashing* light showing a *white flash* of *two seconds'* duration followed by an eclipse of *two seconds*, between the bearings of N. 31° E. (southward of this bearing it is obscured), and N. 56° E. and a *red flash* of *two seconds'* duration followed by an eclipse of *two seconds* from N. 56° E., through south, and towards the harbour: elevated 23 feet above the sea, and visible, the white light from a distance of 10 miles, the red light from a distance of 5 miles.

*Note.*—Entering Warberg harbour, the white flashing light leads clear of Ryggen and Masten shoals on the port-hand, and of Skalklippen rock on the starboard-hand, but when opposite the fort, the course must be altered to the northward, and the flashing red light brought in sight. *Variation*, 12¼° *W.*

395.—Baltic Entrance.—*The Kattegat.—Sweden.—Light on Hallands Wäderö.*—On 22nd October, 1884, a light would be exhibited from a lighthouse erected on the western side of Hallands Waderö:—It is a *fixed white* light, varied by *two red flashes* in quick



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succession *every minute*, visible seaward between the bearings of N. 13° W. and N. 85° W.; elevated 67 feet above the sea, and should be seen from a distance of about 14 miles. The lighthouse, 42 feet high, is constructed of iron, circular in shape, and coloured white. Position, 56° 27′ N., long. 12° 33′ E. *Variation*, 12° *W.*

396.—Baltic Entrance.—*Kattegat.—Sweden.—Light on Grăen Holm.*—On 27th October, 1884, a light would be exhibited from a lighthouse erected on the south side of Grăen holm, Paternoster rocks:—It is an *alternating white and red* light, elevated 68 feet above the sea, and visible, the white light from a distance of about 5 miles, and the red light from a distance of 3 miles; the lighthouse, 11 feet high, is white in colour. Position, lat. 57° 56′ N., long. 11° 32¾′ E.

*Note.*—This light, *which is not constantly attended to*, will be exhibited annually from 1st August to 1st May.

397.—Baltic Entrance.—*The Kattegat.—Sweden.—Marstrand to Göteborg.*

(1.) *Light on Lekskären.*—On 20th October, 1884, a light would be exhibited from a lighthouse erected on Lekskären, inner channel from Martrand to Göteborg:—It is a *flashing* light, with a *flash* of *one second* duration followed by an eclipse of *one second*, showing *red* to the westward from a line extending to Sälöbäde, and *white* in other directions; elevated 24 feet above the sea, and visible, the white light from a distance of about 5 miles, the red light from a distance of 3 miles. Position, lat. 57° 50½′ N., long. 11° 36′ E.

(2.) *Light on Sälö Island.*—On 20th October, 1884, a light would be exhibited from a lighthouse erected on the west side of Sälö island, inner channel from Marstrand to Göteborg:—It is a *fixed white* light, elevated 47 feet above the sea, and visible from a distance of about 5 miles. Position, lat. 57° 49′ N., long. 11° 37¼′ E.

(3.) *Leading Lights on Björkö.*—On 20th October, 1884, two leading lights, which, kept in line indicate the fairway of the channel towards Salö, would be exhibited from lighthouses erected on the western side of Björkö, inner channel from Marstrand to Gotebörg:—The northern light is an *alternating red and white* light, elevated 26 feet above the sea, and visible, the white light from a distance of about 5 miles, the red light from a distance of 3 miles.

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Position, lat. 57° 44½′ N., long. 11° 40½′ E. The southern light, distant 715 yards from the northern light, is a *fixed* white light, elevated 105 feet above the sea, and should be visible in clear weather from a distance of about 5 miles.

(4.) *Leading Lights on Stafvö and Hällsö.*—On 20th October, 1884, two leading lights would be exhibited—the northern light on the south-eastern side of Stafvö, the southern light on the eastern side of Hällsö—which kept in line lead through Kalf sound, inner channel from Marstrand to Gotebörg :—The light on Stafvö is a *fixed* white light, elevated 38 feet above the sea, and visible from a distance of about 5 miles. Position, lat. 57° 44½′ N., long. 11° 39½′ E. The light on Hällsö is an *alternating red and white* light, elevated 10 feet above the sea, and visible, the white light from a distance of about 5 miles, the red light from a distance of 3 miles. Position, lat. 57° 44′ N., long. 11° 40′ E.

(5.) *Light on Great Warholm.*—On 20th October, 1884, a light would be exhibited from a lighthouse erected on the western point of Great Warholm, inner channel from Marstrand to Gotebörg. It is a *flashing* light, with a *flash* of *one second* duration, followed by an eclipse of *one second*, showing *red* between Rödskärsbräten and the south point of Grötö, and *white* in other directions ; elevated 49 feet above the sea, and visible, the white light from a distance of about 5 miles, the red light from a distance of 3 miles. Position, lat. 57° 41¾′ N., long. 11° 42¼′ E.

*Note.*—The above-mentioned lights *are not constantly attended to.* The lighthouses also, are all 11 feet high, and white in colour.

398.—Baltic Entrance.—*Kattegat.—Leading Lights on Ram Holm.*—On 20th October, 1884, two leading lights were exhibited from lighthouses on the west side of Ram holm, inner channel from Marstrand to Göteborg, which are in line in the direction of Lekskären :—The southern light is a *flashing red* light, elevated 17 feet above the sea, and visible from a distance of 3 miles. The lighthouse, 11 feet high, is white in colour. Position, lat. 57° 51½′ N., long. 11° 33½′ E. The northern light, distant 139 yards from the southern light, is a *flashing white* light, elevated 40 feet above the sea, and visible from a distance of about 5 miles. The lighthouse is white in colour.



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*Note.*—These leading lights, *which are not constantly attended to*, will be exhibited annually from 1st August to 1st May.

399.—Baltic Entrance.—*The Sound.—Light at Barsebak.*—On 1st November, 1884, a new light would be exhibited from a light-house erected near the old lighthouse at Barsebak, but southward of the harbour ; it is shown in connection with the old light, which will be maintained. The light is *fixed* showing *red* between the bearings of E. by N. and E. by S. over Kulorna, and from S. 29° E. towards south over Val ground, but *white* in other directions ; elevated 17 feet above the sea, and visible from a distance of about 6 miles. The lighthouse, 16 feet high, is painted gray. Position, lat. 55° 45′ 5″ N., long. 12° 54′ 30″ E. *Variation*, 11¾° *W.*

400.—Baltic Entrance.—*The Sound.—Höganæs.—Alteration in Lights.*—On 1st November, 1884, a light would be exhibited—in lieu of the two harbour lights which have been discontinued for the greater part of this year, and will not again be shown—from a lighthouse erected on the extremity of the completed outer harbour arm at Höganœs. The new light is a *fixed* light, showing *white* between the bearings of S. 70° E. and East; and *red* from East to the southward; it is obscured northward of the bearing S. 70° E. The light is elevated 26 feet above the sea and visible, the white light from a distance of about 6 miles, the red light from a distance of about 4 miles. The lighthouse, 19 feet high, is constructed of stone.

*Note.*—The white light guides vessels in approaching the harbour, until nearing the harbour arm, which should be left on the port hand. *Variation*, 11¾° *W.*

401.—Baltic Entrance.—*Belts, Sound, &c.—Danish System of Buoyage.*—The following system of buoyage has been established in the channels on the coasts of Denmark :—(1.) All sea marks, which should be left on the starboard-hand by vessels approaching from the northward and eastward, are red with red perch. (2.) All sea marks, which should be left on the port-hand by vessels approaching from the northward and eastward, are white with white perch. (3.) All sea marks, which may be passed on either side, are coloured red and white in bands, the perches also having red and white bands.

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*Note.*—This system is not followed in the buoyage of Flint channel, the sea marks on the Swedish coast being red; black sea marks have been placed on the Danish side of the channel. The shape of the sea marks and of the top marks—balls, brooms, &c.—has no special signification. Large sea marks—beacon and bell-buoys, &c.—are only used where desirable for better distinction.

402.—BALTIC.—*The Kattegat.—Læso Channel Light-Vessel.—Alteration in Fog-Signal.*—On 15th October, 1884, the following alteration would be made in the fog-signal on board Læso channel light-vessel:—The signal is a siren, worked by a caloric engine, which, during thick and foggy weather, will give *one* powerful blast *every two minutes.*

403.—BALTIC.—*Kalmar Sound.—Sweden.—Fog-Horn at Grimskär Lighthouse.*—A fog-horn has been established at Grimskär lighthouse, Kalmar sound:—During thick or foggy weather, the horn will give *every four minutes*, a blast of *one minute* duration, followed by an interval of *three minutes.* The sound produced by this horn is not loud, but except during very severe weather, should be heard over the neighbouring channel.

404.—BALTIC.—*Stockholm Approach.—Sandö Channel.—Stälbädan Shoal, Automatic Signal Buoy.*—On 15th October, 1884, the black buoy previously marking Stälbädan shoal, southern side of Sandö channel entrance, would be replaced by an automatic signal buoy. This buoy, fitted with a whistle, is coloured black.

405.—BALTIC.—*Sweden.—Westerwik Approaches.*—On 1st October, 1884, the undermentioned lights would be exhibited in the approaches to Westerwik:—

(1.) *Light on Bussen Islet.*—The light (in place of the beacon) on Bussen islet, shows *fixed red* to the northward, westward and southward; a sector of *white* light is also shown to the southward, through a small arc, between Great and Little Krakan beacons; this light, elevated 31 feet above the sea, is not visible seaward. The lighthouse, 26 feet high, is white; a red storehouse stands near it. Position, lat. 57° 39¼′ N., long. 16° 46′ E. This light, *which is not constantly attended to*, will be exhibited annually from 15th July to 15th December.

(2.) *Light on Stängskär.*—The light on Stängskär is a *fixed white*

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light, elevated 31 feet above the sea. The lighthouse, 25 feet high, is white; a gray storehouse stands near it. Position, lat, 57° 40¼′ N., long. 16° 47¾′ E.

(3.) *Light on Idö Islet.*—The light on Idö islet shows a *flashing red* light eastward of the broom beacon (Kaltrefvet) near Stickskär, and a *flashing white* light westward of that beacon; it is elevated 11 feet above the sea. The lighthouse, 8 feet high, is a small white house on a base of masonry. Position, lat. 57° 42¾′ N., long. 16° 46¼′ E.

(4.) *Light on Stickskär.*—The light on Stickskär is an *alternating red and white* light, elevated 29 feet above the sea. The lighthouse, 16 feet high, is painted white; a red storehouse stands near it. Position, lat. 57° 43′ N., long. 16° 45½′ E.

*Note.*—The beacon on Stickskär is removed. The lights on Stangskär, Idö islet, and Stickskär, *are not constantly attended to*; they will be exhibited annually from 1st April to 15th December.

(5.) *Light on Sparö Islet.*—The light on the southern part of Sparö islet is a *fixed white* light, varied *every minute* by *two red flashes* in quick succession, visible between the bearings of north, through west, and south, it is elevated 111 feet above the sea, and should be seen in clear weather from a distance of 12 miles. The lighthouse, 22 feet high, consists of a white tower, above a dwelling, painted red. Position, lat. 57° 42½′ N., long. 16° 44¼′ E. This light will be exhibited throughout the year, except when navigation, within its range of visibility, is closed by ice. *Variation*, 9° *W.*

406.—Baltic.—*Gulf of Finland.*—(1.) *Light on Veit-kari Rock.*—Exhibited on Veit-kari rock, Aspö group. It is a *flashing red and white* light, visible between the bearings of N. 52° E. through west, and S. 38° E., and should be seen from a distance of 8 miles. Position, lat. 60° 16′ N., long. 27° 15½′ E.

(2.) *Light on Kivi-kari Rock.*—Exhibited on Kivi-kari rock, Aspö group. It is a *flashing red and white* light, visible between the bearings of N. 51° W., through east, and S. 25° W., and should be seen from a distance of 7 miles. Position, lat. 60° 17½′ N., long. 27° 13¼′ E.

*Note.*—The above lights serve as a guide to vessels approaching Aspö; Veit-kari lights should be left about one cable on the port-

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hand, the course should then be shaped on the line between the two lights, leading clear of Katajakariulkomatala and Länsihallikari shoals.

(3.) *Light on Ranka Holm.*—Exhibited near the beacon on Ranka holm, approach to Kutselö :—It is a *flashing red and white* light, visible between the bearings of N. 76° W., through north and east, and S. 80° W., and should be seen from a distance of 8 miles. Position, lat. 60° 22′ N., long. 26° 59¼′ E.

(4.) *Kotka Approach.—Leading Lights.*—Two leading lights *flashing red and white*, and visible from a distance of 8 miles, are now exhibited in the approach to Kotka, which, kept in line, lead clear of all shoals :—The southern light is shown from a rock near Stava holm. Position, lat. 60° 26¼′ N., long. 26° 59¾′ E. ; the northern light is shown from the N.W. side of Kutselö. Position, lat. 60° 27′ N., long. 27° 2′ E.

(5.) *Light on Kauni-sari Holm.*—Exhibited on the northern side of Kauni-sari holm :—It is a *fixed white* light, visible from N. 80° E., through south, to N. 70° W., and should be seen from a distance of 8 miles. Position, lat. 60° 22¼′ N., long. 26° 46¼′ E. *Variation*, 2¼° *W.*

407.—Baltic.—*Gulf of Finland.—Light on Dalskär.*—On 10th September, 1884, a light was exhibited on Dalskär, eastward of Pitkepas islands :—It is a *fixed white* light, visible between the bearings of N. 36° E. and N. 54° W. ; a fainter light is shown over the harbour to the N.W. ; elevated 22 feet above the sea, and should be seen from a distance of 5 miles. Position, lat. 60° 28′ 50″ N., long. 27° 56′ 55″ E.

*Note.*—Vessels approaching the anchorage N.W. of Dalskär, will with this light in sight, clear the shoals on the eastern side of the entrance. *Variation*, 2° *W.*

408.—Baltic.—*Gulf of Finland.—Biörkö Sund.—Light-Vessel with Fog-Bell near Verko Matala Ground.*—On 4th October, 1884, a light-vessel was placed about a quarter of a mile south-eastward of Verko Matala ground, western shore of Biörkö sund :—The light is *fixed red*, elevated 30 feet above the sea, and visible from a distance of 9 miles. The light-vessel, of iron, is painted red, with the name *Werkkomatala* in large white letters on her sides. Position,

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lat. 60° 16¼′ N., long. 28° 46¼′ E. Also, during thick or foggy weather, a bell will be sounded on board Verko Matala light-vessel.

*Note.*—Pilots will be stationed on board this light-vessel.

409.—BALTIC.—*Gulf of Bothnia.—Sweden.—Light on Malmö Island.*—On 14th September, 1884, a light was exhibited from a lighthouse erected on the S.W. point of Malmö island, approach to Ornsköldsvik :—It is a *fixed* light, showing *white* between the bearings of N. 35° W. (on this bearing it is obscured by Malmö Klubb) and N. 4° E. (leading eastward of Rödfla); and *red* from N. 4° E. to N. 62° E.; thence a faint white light is shown within the fairway of the channel; elevated 28 feet above the sea, and should be visible, the white light seaward from a distance of about 5 miles, the red light from a distance of 3 miles, and the faint white light from a distance of about 3 miles. The S.E. side of the lighthouse is white, the rest of the buildings, red. Position, lat. 63° 12′ N., long. 18° 55′ E. *Variation*, 8° *W.*

410.—BALTIC.—*Gulf of Bothnia.—Sweden.—Holmö.—Light on Berg Point.*—On 18th September, 1884, a light would be exhibited from a lighthouse erected on Berg point, west coast of Holmö (Holmön) and eastern side of West Quarken. It is a *fixed white* light, visible between the bearings of N. 31° E. (leading westward of the shoals off the coasts of Holmö group) through east, and S. 34° W. (leading westward of Lillhallan); the light is most powerful between N. 43° E. and S. 23° W.; elevated 20 feet above the sea, and should be seen from a distance of about 10 miles. The lighthouse is white in colour. Position, lat. 63° 46¾′ N., long. 20° 52′ E. *Variation*, 6¼° *W.*

411.—BALTIC.—*Gulf of Bothnia.—Russia.—Raumo Approach.—Light on Valkiakari Islet.*—A light is now exhibited and will continue to be exhibited until navigation is closed, from a lighthouse erected (in the position previously occupied by the beacon) on Valkiakari islet, approach to Raumo. It is an alternating *red and white* light, showing *thirty flashes every minute*, visible between the bearings of S. 67° E., through north, and N. 60° W.; elevated 34 feet above the sea, and should be seen from a distance of about 6 miles. The lighthouse, 21 feet high and painted white, is erected on a wooden scaffolding painted red; a storehouse, also painted

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red, stands a short distance eastward of the lighthouse. Position, lat. 61° 9½′ N., long. 21° 22¾′ E.

412.—BALTIC.—*Gulf of Bothnia.—Russia.—Rafsö Fiard.—Light on Kallo Islet.*—A light is now exhibited from a small wooden building erected on Kallo islet, at the entrance to Rafsö fiard. It is visible seaward through an arc of 73½°, showing *two successive white flashes*, each of *one second* duration, followed by an eclipse of *four seconds*, between the bearings of N.N.E. ¾ E. and N.E. ⅜ N.; a *fixed white* light from N.E. ⅜ N. to E. by N. ¼ N., indicating the fairway of approach to the fiard; and a *flashing red* light of *one second* duration, followed by an eclipse of *four seconds* from E. by N. ½ N. to E. by S. ¼ S., over Trekant ground. The light is elevated 24 feet above the sea, and visible from a distance of about 9 miles. Position on chart, lat. 61° 35½′ N., long. 21° 28¾′ E. Also a *fixed white* light is shown from a pole in Rafsö roadstead, elevated 15 feet above the sea, and visible from a distance of about 7 miles. *Variation*, 6¾° *W.*

413.—MEDITERRANEAN.—*Spain.—Port Aguilas.—Light on Breakwater.*—With reference to previous Notices on the destruction of the breakwater at port Aguilas during a gale, and that the red light at its extremity has been washed away; also on the provisional exhibition of a floating red light inside the outer end of the breakwater. On 1st September, 1884, a light would be exhibited on the breakwater at that port, 386 yards from the inner end, and 27 yards within the extremity of the works. It is a *fixed red* light, elevated 31 feet above the sea.

414.—MEDITERRANEAN.—*France.—Agay Road.—Light on Baumette Point.*—On 15th October, 1884, a light would be exhibited from a lighthouse erected in the position of the old redoubt on Baumette point, eastern side of entrance to Agay road. It is a *flashing* light, eclipsed *every four seconds*, obscured westward of the bearing N.E. (leading about half a cable seaward of the dangers extending off cape Drammond). It shows *white* seaward through an arc of 98°, or between the bearings of N.E. and N.W. ¾ W. (this bearing leading 2¼ cables southward of the tower on Veille d'Agay rock); and *red* northward of the bearing N.W. ¾ W. to the shore. The light is elevated 92 feet above high water, and visible,

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the white light from a distance of 11 miles, the red light from a distance of about 6 miles. The lighthouse, 47 feet high, is constructed of masonry. Position, lat. 43° 25′ 35″ N., long. 6° 52′ 15″ E. *Variation*, 13¼° *W.*

415.—MEDITERRANEAN.—*Marocco.—Zafarin Islands—Light on Isabel Segunda Island.*—A light is now exhibited from a lighthouse erected near the summit of Isabel Segunda island, Zafarin islands :—It is a *fixed white* light, visible from a distance of about 25 miles ; the lighthouse is a square white tower. Position approximate, lat. 35° 11′ N., long. 2° 26′ W.

416.—MEDITERRANEAN.—*Italy.—Telegraph Cable between Capri Island and the Mainland.*—A submarine telegraph has been laid from Capri island, across Bocca Piccola to the Italian coast :—The terminus of this cable on Capri island is on the northern coast, at a position about 1,370 yards W. ½ S. from Calato point; it is first laid in a N.N.E. direction for about one cable, and thence direct to the coast at Cala Mitigliano, northward of Campanella point.

*Note.*—Consequent on this telegraphic communication with Capri island, on 1st October, 1884, the semaphore station at Massa Lubrense, northward of Cala Mitigliano, was discontinued. *Variation*, 10¼° *W.*

417.—MEDITERRANEAN.—*Italy.—West Coast.—Ischia.—Light on Imperatore Point.*—From a lighthouse erected on Imperatore point, S.W. extreme of the island of Ischia. It is alternately a *fixed and flashing* white light, showing *fixed* for *twenty seconds*, and *one flash every five seconds* in the following *twenty seconds ;* elevated 210 feet above the sea, and visible, the fixed light from a distance of 22 miles, the flashes from a distance of 26 miles. The lighthouse, 44 feet high, is painted red; keeper's dwelling (two storeys), adjoining, is painted white. Position, approximate, lat. 40° 42½′ N., 13° 51½′ E.

418. — MEDITERRANEAN.—*Italy. — Gulf of Taranto. — Port Cotrone.—Alterations in Harbour Light.*—Also, that on 1st October, 1884, a light of greater power than previously, would be exhibited from the mole head at port Cotrone, west shore of gulf of Taranto. The new light is a fixed *red* light; elevated 30 feet above the sea, and should be visible in clear weather from a

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distance of 5 miles. The illuminating apparatus is dioptric, or by lenses. The light is shown from an iron support above the keeper's dwelling, the whole painted lead colour.

419.—MEDITERRANEAN.—*Adriatic.—Dalmatia.—Port Makarska. —Light on St. Pietro Peninsula.*—On 1st October, 1884, a light would be exhibited from a lighthouse erected on the N.W. point of St. Pietro peninsula, approach to port Makarska :—It is a *fixed white* light, visible through an arc of 180°, or between the bearings of N.N.W. ¾ W. and S.S.E. ¼ E. ; elevated 51 feet above the sea, and should be seen from a distance of 13 miles. The lighthouse, 46 feet high, consists of a square tower above the keeper's dwelling, the whole of light coloured stone. Position, lat. 43° 17′ 40″ N., long. 17° 0′ 40″ E. *Variation*, 9° *W.*

420.—MEDITERRANEAN.—*Adriatic.—Harbour Light at Vodice.*— A harbour light is now exhibited from an iron support, placed above a mooring bollard on the mole head at Vodice :—It is a *fixed red* light, elevated 13 feet above the sea (11 feet above the ground), and visible from a distance of 2 miles. Position, lat. 43° 45½′ N., long. 15° 46½′ E.

*Note.*—During strong S.E. gales, the exhibition of this light will be impracticable.

421.—MEDITERRANEAN.—*Adriatic.—Harbour Light at Petercane.* —A harbour light is now exhibited from a house situated on the shore of the port of Petercane, eastern side of Zara channel.—It is a *fixed white* light, visible seaward between the bearings of N.E. by E. ¼ E. and S.E. ; elevated 21 feet above the sea, and should be seen from a distance of 4 miles. Position, lat. 44° 11′ N., long. 15° 9¾′ E. *Variation*, 9¼° *W.*

422.—BLACK SEA.—*Shoal at Kertch Strait Entrance.*—A shoal has formed near the entrance to Kertch strait, abreast the second red buoy off Ak-bouroun (approaching from the westward) and with the leading lighthouses for the dredged channel in line. This shoal has 17 feet on it, and is marked by a black beacon with flag.

423.—BLACK SEA.—*Kherson Bay.—Fort Nicolaevski leading lights.—Arcs of Visibility.*—With reference to previous Notice on the exhibition of two leading lights from lighthouses erected on Fort Nicolaevski, eastward of Kinburn spit, and which, kept in line,

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lead to the entrance of the channel over the bar ; both these lights show *fixed red* through an arc of 180°, or between the bearings of N. 9½° E., through east, and S. 9½° W. ; also a *fixed white* light is shown from the eastern lighthouse through an arc of 180° ; or from N. 9½° E., through west, to S. 9½° W. *Variation*, 2½° *W.*

424.—North Atlantic.—*Cape Verde Islands.—St. Vincent Island.—Porto Grande.—Buoys marking Telegraph Cables.*—Two additional sections of telegraph cables have been laid from the northern part of Porto Grande, St. Vincent island, for communication with Madeira and Pernambuco respectively—and in consequence, the two buoys previously marking the 1874 cables, have been replaced by others of a larger size, painted red, and surmounted by staff and frame globe ; these buoys are placed a little westward of the former positions. The northern buoy is moored in 8 fathoms, with the following bearings and approximate distance :—Pta. do Ribeira Julian (João Ribeiro), N. 28° E., distant 5½ cables ; Pta. do Moro Branco, West. The southern buoy is moored in 4¾ fathoms, on the line joining the northern buoy and the fort. A smaller buoy, without a globe, lies eastward of the southern buoy, in 3¾ fathoms, indicating the position where the new cables separate.

*Note.*—Anchorage eastward of these buoys, or in the vicinity of the telegraph cables, is prohibited. Vessels approaching from the northward at night should not anchor, or steer towards the anchorage, until the red light on the Custom House pier (which is obscured by Fort point) is in sight. *Variation*, 19¾° *W.*

425.—China Sea.—*Pulo Condore Group.—Intended Light on Haon Bai Kan Island.*—From a lighthouse in course of construction on the Eastern point of Haon Bai Kan island, Pulo Condore group. It will be a *fixed white* light, visible through an arc of 264°, or between the bearings of N. 56° E. and S. 28° E., except where obscured by Haon Cao islet, through a sector of 17°, or from S. 43° W. to S. 60° W. ; elevated 696 feet above the sea, and should be seen from a distance of about 27 miles. Position, lat. 8° 40½′ N., long. 106° 41′ E. *Variation*, 2° *E.*

426.—China Sea.—*East Coast.*—(1.) *Blocking of Yung River.*—The Chinese authorities at Ning-Po are taking steps to block the

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entrance to Yung river, by driving piles. A space of 176 feet will be left clear in the centre of the piles, the passage through which will be marked by flags during the day, and by lights at night.

(2.) *Blocking of Wusung River.*—The Chinese authorities have commenced operations for blocking Wusung river, approach to Shanghai.

*Note.*—The precise position of these barriers is unknown.

(3.) *Blocking of Canton River.*—With reference to previous Notice that Canton river would be blocked below the city of Canton, a narrow passage only being left for steam-vessels;—the barriers in Cambridge and Collinson reaches are now lighted by a *fixed red* light on the starboard-hand and a *fixed green* light on the port-hand (proceeding up the river); also, the construction of another barrier in Collinson reach, between No. 3 Flat island and the south bank of the river, is in progress.

427.—JAPAN.—*Kiusiu.—East Coast.—Oshima.—Light on Kura Saki Hana.*—On 15th August, 1884, a light was exhibited from a lighthouse erected on Kura Saki Hana, the south extreme of Oshima, approach to Aburatsu harbour:—It a *revolving white* light, showing a bright flash *every thirty seconds*, and visible through an arc of 315°, or between the bearings of S. 34½° E. and S. 10½° W.; elevated 287 feet above the sea, and should be seen from a distance of 24 miles; the lighthouse, 32 feet high, is constructed of concrete and painted white. Position on chart, lat. 31° 31′ N., long. 131° 25′ E. *Variation*, 3½° *W.*

428.—RUSSIAN TARTARY.—*Peter the Great Bay.—Eastern Bosphorus Strait.—Leading Light on Skrypleff Island.*—Exhibited on the N.W. side of Skrypleff island, east entrance of Eastern Bosphorus strait, approach to Vladivostok. It is a *fixed green* light, and is so placed, that when kept in line with the light on the summit of the island, it leads through Eastern Bosphorus strait.

429.—AUSTRALIA.—*East Coast.—Light on Double Island Point.*—The Queensland Government has given Notice, that in the latter part of the month of August, 1884, a light would be exhibited from a lighthouse erected on the summit of Double Island point. The light is a *revolving* white light of the third order, with an

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interval of *thirty seconds* between the flashes, elevated 335 feet above the sea, and should be visible in clear weather from a distance of 25 miles. Position approximate, lat. 25° 56′ S., long. 153° 12½′ E.

430.—AUSTRALIA.—*East Coast.*—*Pioneer River Entrance.*—*Leading Lights on East Point.*—Two leading lights are now exhibited from beacons erected on East point, Pioneer river entrance, which, kept in line, lead through the deepest water over the flats at the lower end of the Town reach. They are *fixed white* lights.

431.—AUSTRALIA.—*South Coast.*—*Bass Strait.*—*Seal or Direction Islands.*—*Light on Cliffy Island.*—With reference to Notice to Mariners in 1883, on the intended exhibition of a light from a lighthouse then in course of construction on the southern side of Cliffy island, Seal or Direction islands, northern shore of Bass strait; on September 8, 1884, the light would be exhibited:—It is a *flashing red* light, showing *five flashes and eclipses* alternately *in every minute; elevated* 180 feet above the sea, and visible from a distance of 15 miles. The lighthouse, 25 feet high, is constructed of stone. Position approximate, lat. 38° 57′ 10″ S., long. 146° 42′ 25″ E.

432.—NEW ZEALAND.—*North Island.*—*West Coast.*—*Kaipara Harbour.*—*Intended Light on North Head.*—A lighthouse is in course of erection on North head of Kaipara harbour; from which it is anticipated that a light will be ready for exhibition about the month of December, 1884. It will be a *flashing white* light, showing a *flash every ten seconds.* Position approximate, lat. 36° 23½′ S., long. 174° 8½′ E. Further particulars in due course.

433.—NEW ZEALAND.—*North Island.*—*East Coast.*—*Bay of Islands.*—*Light on Waimangaroa Point.*—On 11th August, 1884, a light would be exhibited from the northern extremity of the Railway Coal wharf at Waimangaroa (Opua) point, at the junction of Kaua-kaua and Waikari rivers. It is a *fixed red* light, visible between the bearings of S.E. by E. ½ E., through S. and S.W. ½ W. Position, lat. 35° 19′ S., long. 174° 8½′ E. *Variation*, 13½° *E.*

434.—NEW ZEALAND.—*Middle Island.*—*Massacre Bay.*—*Leading Lights at Port Waitapu.*—On 10th September, 1884, four leading

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lights would be exhibited at Port Waitapu, southern side of Massacre bay :—They are two *fixed white* lights and two *fixed green* lights. Entering the river, the two white lights on Waitapu hill should be kept in line bearing about S.S.E., until the two green lights above the wharf are brought in line ; then steer on that course as far as the wharf. Position approximate, lat. 40° 49½′ S., long. 172° 50′ E.

*Note.*—The red beacons should be left on the starboard-hand when entering, the black beacons on the port-hand. *Variation*, 14¾° *E.*

435.—UNITED STATES.—*New York.—Electric Light at Hell Gate.* —Exhibited from the structure recently erected at Hell Gate, on Hallet's point, Astoria, New York. The structure consists of a skeleton iron tower, 250 feet high, on top of which are nine powerful electric lights arranged in an arc comprising 270 degrees of the horizon. This light is designed to illuminate the channel through Hell Gate rather than as a beacon-light. It will, however, unless accidentally extinguished, be visible on Long island sound, from a height of 18 feet above the water, until cut out by Whitestone point. Vessels approaching from the eastward intending to go through Hell Gate should note, after passing Whitestone point, whether or not the light is visible.

436.—GULF OF ST. LAWRENCE.—*Cape Breton Island.—Great Bras d'or Lake.—Barra Strait.—Derby Point.—Light near Piper Cove.*—On 1st October, 1884, a light would be exhibited from a lighthouse erected near Piper cove, western bend of Derby point, eastern side of Barra strait or Grand Narrows. It is a *fixed red* light, elevated 77 feet above high water, and visible from a distance of 11 miles. The lighthouse, 38 feet high, is a square wooden building painted white. Position, lat. 45° 56½′ N., long. 60° 47¼′ W.

*Note.*—This light is intended to guide vessels to Barra strait from the westward.

437.—GULF OF ST. LAWRENCE.—*Cape Breton Island.— Great Bras d'or Channel. — Boulardrie Island. — Light on McNeills Beach.*—On 5th August, 1884, a light was exhibited from a pole on McNeills beach, N.W. coast of Boulardrie island, for the guidance of vessels navigating Great Bras d'Or channel. It is a

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*fixed red* light, elevated 33 feet high above high water, and visible from a distance of 8 miles. The pole, 25 feet high, has a shed painted white at the base. Position, lat. 46° 14′ N., long 60° 29′ W.

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CHARTS, PLANS, &c., PUBLISHED BY THE HYDROGRAPHIC DEPARTMENT, ADMIRALTY, IN SEPTEMBER AND OCTOBER, 1884.

| *No.* | | *s.* | *d.* |
|---|---|---|---|
| 1194 | Spain, south coast :—Cartagena harbour ... ... | 1 | 6 |
| 856 | South Pacific Ocean :—Anchorages in New Hebrides islands—Tomman or Uru island. Craig cove. Yemyu cove. Foreland anchorage. Nelson bay. Diamond bay ... ... ... ... ... | 1 | 6 |
| 867 | Bermuda islands :—The Narrows to Ireland island... | 1 | 0 |
| 498 | Australia, east coast :—Port Molle and Molle channel. Kenedy sound ... ... ... ... ... | 1 | 6 |
| 858 | Australia, west coast :—Roebuck bay ... ... | 1 | 6 |
| 40 | India, west coast :—Karachi harbour ... ... | 2 | 6 |
| 1444 | Scotland, east coast :—Montrose harbour ... ... | 1 | 0 |
| 81 | Red sea :—Mersa Durár to Trinkitat, showing the approaches to Sawákin ... ... ... ... | 2 | 6 |
| 1052 | Australia, north-west coast :—Hall point to cape Bertholet, including King sound and the Buccaneer archipelago ... ... ... ... | 1 | 0 |
| 2460 | North-west Pacific :—Kamchatka to Kodiak island, including Bering strait ... ... ... ... | 2 | 0 |
| 805 | South America, Magellan strait:—Harbours and anchorages—Sylvia cove. Sylvia channel. Baker cove. Rocky inlet. Marsh basin. Cripples channel. Field anchorage. Havergal bay ... | 2 | 0 |
| 219 | Plan added. Kluang bay. | | |
| 135 | Plans added. Tomari Ura. Kata Ura. | | |

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CHARTS THAT HAVE RECEIVED IMPORTANT CORRECTIONS.

| *No.* | |
|---|---|
| 623 | Africa, west coast :—Fernando Po island. |
| 78 | Spain, north coast :—Port Cedeira. Port Vivero. Port Rivadeo. |

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*No.*

1848 Spain, south coast :—Port of Malaga.

1055 Australia, west coast :—Bedout island to cape Cuvier.

1951 England, west coast :—Liverpool bay.

1170*b*. England, west coast :—Holyhead to Liverpool, eastern sheet.

2182*a*. North sea :—Southern sheet.

2576 Eastern archipelago :—Sulu archipelago and north-east coast of Borneo.

2810 Ireland, east coast :—Lough Carlingford entrance.

853 North America, east coast :—St. Andrew sound to St. John river.

1807 Australia, north coast :—Carpentaria gulf, southern side.

1630 England, east coast :—Orfordness to Cromer.

518 Australia, west coast :—Shark bay.

1056 Australia, west coast :—Cape Cuvier to Champion bay.

2339 North sea.

243 Mediterranean sea :—Port of Alexandria.

893 Newfoundland :—Burin harbour to Devil bay.

2662 Eastern archipelago :—Ports in Macassar strait.

1043 Australia, north coast :—Gulf of Carpentaria.

1044 Australia, north coast :—Gulf of Carpentaria to cape Ford.

648 Africa, east coast :—Delagoa bay to Masangzani bay.

1607 England, Thames river :—North Foreland to the Nore.

2124 New Guinea, south coast :—Bramble haven to Rossel island.

1777 Ireland, south coast :—Queenstown harbour.

2094 England, west coast :—Isle of Man.

1752 Australia, south coast :—Approaches to Port Adelaide.

2728 Spain, west coast :—Bayonne to Oporto.

632 Africa, west coast :—Walfisch bay to Orange river.

2522 South America, east coast :—Santa Catherina to Rio de la Plata.

77 Spain, north coast :—Gijon bay and Barquero entrance.

493 South America, east coast :—Piedras Negras point to Santa Lucia river.

516 North America, west coast :—Mangrove bluff to cape Corrientes.

2661*a*. China sea :—Northern portion.



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HYDROGRAPHIC NOTICES ISSUED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY.

*No.*

19.—EASTERN ARCHIPELAGO. Relating to the N.E. coast of Borneo, and other parts of the Eastern archipelago.

20.—NORTH AMERICA, west coast. Relating to the western coast of North America.

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BOOKS.

| | s. | d. |
|---|---|---|
| ADMIRALTY CATALOGUE of Charts, Plans, and Sailing Directions, 1884 ... ... ... ... ... ... | 1 | 0 |
| TIDE TABLES for 1885 ... ... ... ... ... | 1 | 6 |
| BLACK SEA PILOT, 3rd edition, 1884 ... ... ... | 2 | 0 |
| SAILING DIRECTIONS FOR THE BRISTOL CHANNEL, 4th edition, 1884 ... ... ... ... ... ... ... | 2 | 6 |
| NEWFOUNDLAND PILOT, Supplement No. 1, 1884 ... ... | 0 | 8 |
| AFRICAN PILOT, part 3, Supplement No. 1, 1884 ... ... | 0 | 6 |
| AUSTRALIAN DIRECTORY, vol. 2, Supplement, 1884. | | |

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## OUR OFFICIAL LOG.

### AUSTRO-HUNGARIAN SHIPS.

Whereas, by Section 5 of the Merchant Seamen (Payment of Wages and Rating) Act, 1880, it is provided that where a ship is about to arrive, is arriving, or has arrived at the end of her voyage, every person not being in Her Majesty's service, or not being duly authorised by law for the purpose, who——

(*a.*) goes on board without permission of the master before the seamen lawfully leave the ship at the end of their engagement, or are discharged (whichever last happens) or

(*b.*) being on board the ship remains there after being warned to leave by the master, or by a police officer, or by any officer of the Board of Trade, or of the Customs,

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shall for every such offence, be liable on summary conviction, to a fine not exceeding twenty pounds, or, at the discretion of the Court, to imprisonment for any term not exceeding six months; and the master of the ship, or any officer of the Board of Trade, may take him into custody and deliver him up forthwith to a constable to be taken before a court or magistrate capable of taking cognizance of the offence and dealt with according to law.

And whereas, it has been made to appear to Her Majesty—

(1.) That the government of Austro-Hungary has provided that unauthorised persons going on board British ships which are about to arrive, or have arrived within its territorial jurisdiction, shall be subject to provisions similar to the provisions contained in the said herein first-recited sections as applicable to persons going on board British ships at the end of their voyages; and

(2.) That the said Government is desirous that the provisions of the said first-recited section shall apply to unauthorised persons going on board Austro-Hungarian ships within the limits of British territorial jurisdiction:

Now, therefore, Her Majesty, by virtue of the power vested in Her by the said recited Act, and by and with the advice of Her Privy Council, is pleased to declare that the provisions of the said first-recited section shall apply to Austro-Hungarian ships.

17th October, 1884. C. L. PEEL.

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THE Board of Trade have awarded a binocular glass to Captain F. H. Young, of the barque *Edmund Phinney*, of Portland, Maine, U.S.A., in recognition of his humanity and kindness to the shipwrecked crew of the barque *W. H. Harkess*, of Swansea, who abandoned their vessel in the South Pacific on the 8th June last, and were taken the same day on board the *Edmund Phinney*, where they remained until the 15th June, when they landed at Port Stanley, Falkland Isles.

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THE Board of Trade have awarded a binocular glass to Captain Antonio Viñes, of the Spanish steamship *St. Domingo*, of Corunna,



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and to Captain Prosper Le Belle, of the French steamship *Ville de Vallence*, of Havre, in recognition of their services to the shipwrecked crew of the steamship *Laxham*, of Whitby, whom they received on board their vessels when the *Laxham* was sunk, in collision with the Spanish steamship *Gijon* off Cape Finisterre on the 21st July last.

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THE Board of Trade have awarded a piece of plate to Captain A. Ricciotti, Master of the Italian barque *Iside B.*, of Spezia, in acknowledgment of his humanity and kindness to the shipwrecked crew of the barque *Earl Beaconsfield*, of Glasgow, which was abandoned at sea while on a voyage from Greenock to San Francisco.

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THE Board of Trade have awarded binocular glasses to Captain Bernhard Olsen, of the Norwegian smack *Jemima*, of Flekkefjiord, Captain Amund S. Paulsen, of the Norwegian schooner *Skirner*, of Tonsberg, and Captain Johann Gunnlangsson, of the Icelandic vessel *Stormur*, of Fagraskogur, in recognition of their humanity and kindness to several members of the crew of the schooner *Chieftain*, of Dundee, who had lost their vessel in a fog off the coast of Iceland, on the 27th May last.

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## OFFICIAL INQUIRIES AT HOME, 1884.

2331. *Belmont*, tug, and *New Pelton*, s.s.; former built at Low Walker, 1861; owned by Mr. R. Duff; tonnage, 7; from the Tyne, seeking; latter built at Howden, 1865; owned by Mr. J. Thompson, and others; tonnage, 525; London to Newcastle; in collision off Sunderland, September 11, 1884, when former vessel sunk, two of her crew being drowned. Inquiry held at Greenwich, October 15, 1884, before Balguy, Judge; Ronaldson, Pickard and Pattison, N.A. Collision caused by the joint action of both vessels, the master of the *Belmont* having neglected to show a flare-up or white light over the stern, and the look-out of the *New Pelton* having left his post. Certificates not dealt with.

2332. *Accretive*, s.s.; built at Sunderland, 1881; owned by Mr. T. Stockdale; tonnage, 778; Tyne to Aarhuus; coal; stranded

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near Hielm Island Lighthouse, Denmark, December 19, 1883. Inquiry held at Sunderland, October 74, 1884, before Ritson and Potts, Justices; Parish and Murdoch, N.A. Stranding caused by the want of attention on part of first mate, who navigated vessel too close to the land. Certificate suspended for three months; recommended for one as second mate.

2333. *Levenvale*, s.s.; built at Middlesborough, 1882; owned by Mr. J. M. Lennard; tonnage, 806; Rochester to Poti; cement; stranded near Vierge Lighthouse, France, September 20, 1884. Inquiry held at Sunderland, October 15, 1884, before Ritson and Pecket, Justices; Parish and Murdoch, N.A. Stranding due to fog and neglect of the lead. Master reprimanded.

2334. *Newington*, s.s.; built at Belfast, 1883; owned by Mr. R. Mackie and others; tonnage, 713; Grangemouth to Cronstadt; coal; stranded upon Neckman grund, May 16, 1884. Inquiry held at Leith, October 15, 1884, before Garland and Wilson, Justices; Methven and Wilson, N.A. Stranding due to master wrongly estimating his distance from Ristua Point, and the absence of the ordinary beacons on Neckman grund. Certificate not dealt with.

2335. *Kingfisher*, and *Myrtle*, fishing smacks; former built in 1866; owned by Mr. G. S. King; tonnage, 41; latter built in 1878; owned by Mr. W. H. Makepeace; tonnage, 53; in collision off Borkum Lightship, July 18, 1884; when the former vessel sunk, five of her crew being drowned. Inquiry held at Great Yarmouth, October 17, 1884, before Barnard and Stone, Justices; Hight, Comyns and Moresby, N.A. Casualty due to the bad look-out on both vessels, and to the *Kingfisher* neglecting to comply with the sailing rules. Skipper of *Kingfisher* also not justified in leaving deck in charge of fifth hand. Both vessels deficient in life-saving apparatus.

2341. *Moss Brow*, s.s.; built at Whitby, 1882; owned by Mr. G. Pyman and others; tonnage, 1,131; London to Cardiff; ballast and three passengers; stranded at the Lizard, October 1, 1884. Inquiry held at Cardiff, October 22, 1884, before Jones, Judge; Parfitt and Davies, N.A. Stranding caused by master neglecting to verify his position accurately, whereby he steered too fine a course to pass the Lizard; and by the neglect of the mate to keep

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a proper look-out, and to call the master. Vessel also undermanned. Certificate of master suspended for four months, that of mate for six months.

2342. *Wiltshire*, s.s., and *Santa Margherita Liguri*, Italian barque; former built at Hartlepool, 1877; owned by Mr. G. Renwick and others; tonnage, 325; Newcastle to Huelva, Spain; general cargo; latter owned by Mr. R. Filipi, Leghorn; tonnage, 353; Buenos Ayres to Antwerp; wheat; in collision off Beachy Head, September 25, 1884, when the latter vessel sunk, two of her crew being drowned. Inquiry held at Westminster, October 23, 1884, before Rothery, Wreck Commissioner; Powell, Harland, and Hyde, N.A. Collision due to the *Wiltshire* neglecting to keep out of the way of the barque, for which the boatswain, acting second mate, is responsible. Uncertificated.

2343. *Windsor Castle*, ship; built at Sunderland, 1857; owned by Mr. Cox and others; tonnage 1,074; Cochin to London; general cargo; lost her rudder and was abandoned off East Coast of Africa, July 25, she also lost her third mate overboard, June 28, 1884. Inquiry held at Westminster, October 25, 1884, before Rothery, Wreck Commissioner; Hight, Knox and Ronaldson, N.A. Vessel seaworthy on sailing. Abandonment justifiable. No one to blame for loss of third officer.

2346. *Speedwell*, s.s.; built at Port Glasgow, 1880; owned by Great Northern Steam Fishing Company, Limited; tonnage, 94; Great Northern Fishing Fleet, Clay Deeps to London; fish; stranded on South Cross Sand, October 7, 1884. Inquiry held at Hull, October 27, 1884, before Twiss, Judge; Anderson and Kennedy, N.A. Stranding due to master neglecting to take cross bearings when off the Newarp light, and consequently setting an unsafe course, and also to the bad look-out. Certificate as skipper suspended for three months.

2350. *Black Diamond*, s.s.; build at Sunderland, 1855; owned by Mr. W. Stobart and others; London to Sunderland; ballast; stranded near Ryhope, Durham, October 6, 1884. Inquiry held at Sunderland, October 24, 1884, before Potts and Horan, Justices; Ward and Wilson, N.A. Stranding due to master running ship at full speed in a dense fog, and not acting on the warnings of the lead.

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Reprimanded. Assessor Ward contended that a proper look-out was not kept.

2351. *Florence Nightingale*, s.s.; built at Sunderland, 1878; owned by Mr. J. F. Marshall and others; tonnage, 629; Drontheim to Archangel; ballast; stranded on Froset Rocks, July 24, 1884. Inquiry held at North Shields, November 3, 1884, before Green and Jackson, Justices; French and Vaux, N.A. Master in default for setting a wrong course and neglecting to place a look-out on the forecastle. Certificate suspended for six months. Owners ordered to pay £10 towards the costs of the Inquiry.

2352. *Europa*, s.s., and *Roseville*, s.s.; former built at Jarrow, 1862; owned by Mr. C. Palgrave; tonnage, 424; Glasgow to Malaga; general cargo; latter built at West Hartlepool, 1881; owned by Mr. R. Shadworth and others; tonnage, 1,085; Taganrog to Glasgow; barley; in collision off the Cloch Lighthouse, Firth of Clyde, October 11, 1884, when the former sunk with five of her crew. Inquiry held at Glasgow, October 31, 1884, before Rothery, Wreck Commissioner; Castle, Pattison, and Kiddle, N.A. Collision due partly to default of master of the *Europa*, for not having kept out of the way of the *Roseville*, and partly to both masters for not having stopped and reversed their engines. Certificate of master of *Roseville* not dealt with. Master of *Europa* drowned.

2353. *Samarang*, barque; built at St. John's, New Brunswick, 1857; owned by Mr. T. Emmerson and others; tonnage, 1,154; from Quebec, with timber; stranded on Saltburn Scars, October 10, 1884. Inquiry held at North Shields, October 30, 1884, before Tate and Hill, Justices; French and Vaux, N.A. Stranding due to the neglect of the lead. Certificate of master suspended for three months.

2354. *Jeanie*, s.s.; built at Hartlepool, 1882; owned by Mr. J. Coverdale and others; tonnage, 1,172; Cronstadt to London; grain and wood; stranded near Ostergarns Lighthouse, Gothland, July 25, 1884. Inquiry held at Newcastle, November 5, 1884, before Rothery, Wreck Commissioner; Beasley and Comyn, N.A. Master in default for not having made sufficient allowance for deviation, and neglecting the lead. Certificate suspended for six months; recommended for one as mate.

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2357. *Austria*, s.s. ; built at Howdon, 1884 ; owned by Mr. G. W. Ward and others ; tonnage, 1,083 ; Fiume to Glasgow ; general cargo ; stranded on Ailsa Craig, October 15, 1884. Inquiry held at Newcastle, November 5, 1884, before Rothery, Wreck Commissioner ; Beasley and Comyn, N.A. Stranding due to negligent navigation on part of master and second officer. Both their certificates as master suspended for six months ; recommended for certificates as mate.

2358. *Craigforth*, s.s. ; built at Glasgow, 1869 ; owned by Mr. Slimon and others ; tonnage, 687 ; Iceland to Leith ; sheep ; stranded near Rosehearty, October 18, 1884. Inquiry held at Edinburgh, November 11, 1884, before Rutherford, Judge ; Methven and Harland, N.A. Master in default for setting too fine a course, and making no allowance for tide. Certificate suspended for three months. Chief officer censured.

2359. *Fairway*, s.s. ; built at Dundee, 1884 ; owned by Fairway Steamship Company, Limited ; tonnage, 373 ; Sweden to Hartlepool ; ballast ; stranded off Hartlepool, October 11, 1884. Inquiry held at West Hartlepool, November 8, 1884, before Rothery, Wreck Commissioner ; Parfitt and Murdoch, N.A. Stranding due to master not keeping a proper course when making for the harbour. Certificate not dealt with.

2360. *Closeburn*, barque ; built at Glasgow, 1881 ; owned by Mr. T. C. Guthrie and others ; tonnage, 896 ; Lyttleton, N.Z., to Queenstown ; wheat ; lost three of her crew overboard through shipping a heavy sea off Cape Horn, June 25, 1884. Inquiry held at Westminster, November 11, 1884, before Rothery, Wreck Commissioner ; Ronaldson, Pickard and Hyde, N.A. Loss of life due to violence of gale.

2362. *Simiote*, s.s. ; built at Leith, 1858 ; owned by Messrs. Bell and Clark ; tonnage, 299 ; Glasgow to Smyrna ; coal and three passengers ; stranded twelve miles N.E. by E. of the Berlengas Light, Portugal, October 8, 1884. Inquiry held at Glasgow, November 1, 1884, before Rothery, Wreck Commissioner ; Castle and Pattison, N.A. Stranding due to the neglect of the lead. Certificate of master suspended for six months. Recommended for one as mate.

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2277*a*. *Vicksburg*. An appeal by the master against the decision of the Court of Inquiry held at Leith, into the stranding of this barque on the Pentland Skerries in July last. Appeal heard by the First Division of the Court of Session at Edinburgh, October 29, 1884; Atkins and Burne, Elder Brethren of Trinity House, N.A. Master navigated his ship with earnestness, vigilance, and to the best of his ability, and was not to blame. Previous decision, which suspended his certificate for six months, recalled. Master allowed expenses.

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### Official Inquiries Abroad, 1884.

2330. *Maggie*, s.s.; injured her boiler whilst engaged towing. Inquiry held at Sydney, August 11, 1844. Casualty caused by the engineer allowing the water in the boiler to become low. Certificate suspended for three months.

2336. *Dart*, s.s.; stranded on Island of San Sebastian, September 11, 1884. Inquiry held at Rio, September 17, 1884. Loss of vessel due to master neglecting to take cross-bearings. Certificate suspended for six months; recommended for one as mate.

2337. *Wariepa*, schooner, and *Ilala*, ship; in collision, August 30, 1884, whilst former vessel was removing from the Dyke to the Coal Shoots, in tow of the tug *Prince Alfred*. Inquiry held at Newcastle, N.S.W., September 5, 1884. Master of *Prince Alfred* to blame for crossing the bows of the *Ilala*. Censured.

2338. *Ringarooma*, s.s.; stranded on South Head, Akaroa, August 16, 1884. Inquiry held at Lyttelton, N.Z., August 28, 1884. Casualty attributed to fog, the neglect of the lead, and possibly the presence of a current.

2339. *Barrabool*, s.s., and *Birksgate*, s.s.; in collision near Bradley's Head, Port Jackson, August 9, 1884. Inquiry held at Sydney, August 25, 1884. Master of *Birksgate* in default for crossing the bows of the *Barrabool*, which vessel was coming up the harbour on her proper side. Certificate suspended for three months.

2340. *Augusta*, brigantine; stranded on Point Island, New River Heads, August 24, 1884. Inquiry held at Invercargill, N.Z.,

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August 28, 1884. Loss of vessel caused by the misdirection of the semaphore at New River.

2344. *Lastingham*, ship; stranded near Cape Jackson, N.Z., September 1, 1884, when eighteen lives were lost, including the master. Inquiry held at Wellington, N.Z., September 6, 1884. Loss due to vessel becoming embayed, owing to master allowing vessel to drift on the chance of picking up the Brothers Light, instead of running up Cook Strait.

2345. *Linwood*, s.s.; stranded off East Point, Maldonado, September 18, 1884. Inquiry held at Monte Video, September 26, 1884. Loss due to master underestimating his distance from Maldonado Light, and to the carelessness of the look-out. Master ordered to pay costs of the Inquiry.

2347. *Devon*, s.s., and *Warrentinna*, s.s.; in collision in the River Tamar, Tasmania, July 1, 1884. Inquiry held at Launceston, September 6, 1884. Collision caused by the master of the *Warrentinna* edging the *Devon* into shallow water, while attempting to race her. Ordered to pay costs of the Inquiry.

2348. *Earl Beaconsfield*, four-masted barque; abandoned on fire in lat. 53° S., long. 85° W., August 12, 1884, when three months out on voyage from Greenock to San Francisco. Inquiry held at Valparaiso, September 5, 1884. Fire originated from spontaneous combustion of cargo of coal. Abandonment justifiable.

2349. *Rotomahana*, ship; lost on Elephant Cay Rocks, Falkland Sound, August 19, 1884. Inquiry held at Stanley, Falkland Islands, September 6, 1884. Loss due to the ignition of her cargo of coal, which heated the iron construction of the ship, and affected her compasses.

2355. *Colac*, s.s., and *Willie Reed*, ship; in collision, August 30, 1884. Inquiry held at Newcastle, N.S.W., September 18, 1884. Collision due to *Colac* getting too far across the Channel after leaving the wharf.

2356. *Bridegroom*, barquentine; abandoned on fire when three months out on voyage from Garston to Valparaiso, September 8, 1884. Inquiry held at Valparaiso, September 12, 1884. Fire originated from spontaneous combustion of cargo of coals. Abandonment justifiable.

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2361. *Charles Jackson*, barque; wrecked on the Bar, Port Natal, August 26, 1884. Inquiry held at Durban, September 16, 1884. Stranding due to parting of cables, which were very old and worn.

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## THE COMMERCIAL CODE OF RUSSIA.

(*Continued.*)

### CHAPTER VI.

*On Compensation for Private Losses occasioned by the Damage of Merchant Vessels by Government Vessels, and vice versâ.*

1123. When a ship of war collides with, or fouls, a merchant ship in any Russian roadstead, haven or port, on a complaint being brought before the chief local authorities, they immediately make arrangements for an inquiry into the matter by maritime officials and deputies from the mercantile corporation, if the inquiry is made at the instigation of the marine authorities in the port; and by deputies from the mercantile and marine corporations, if the inquiry be conducted at the instigation of the civil authorities.

Note (Supt. of 1876).—By the regulations formed on the basis of the judicial code, affairs relating to the various branches of State administration, criminal as well as civil, are conducted without deputies being appointed on the part of the corporations or departments usually competent for session [hearing] in courts. This note also relates to Arts. 862* (App. 1-25) and 1130.

1124. If such accident (Art. 1123) happen at a distance from a port, but off the Russian coast, the coast guard obtains information on the subject by examining the inhabitants; the commander of the war vessel and the master of the merchant vessel are bound, for their own protection, without loss of time, to communicate all details of the occurrence to the police authorities.

1125. This preliminary investigation of the affair, in case of either party bringing a complaint, serves as a basis for holding a formal inquiry at the Russian port to which both vessels come. If

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* Reference to this Art. will show that, for practical purposes, it was repealed in or prior to 1883.

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the vessels arrive in different ports, the complaint is brought in that in which the vessel from which damages are demanded is, where the formal inquiry is then proceeded with, the informations necessary to the case being brought before the Court by the authorities of the port to which the other vessel went.

1126. In case of war vessels being damaged by Russian merchant vessels, and *vice versa*, off the coasts of foreign powers, the preliminary investigation is made by the Russian consuls in those places; the formal inquiry is conducted in a Russian port, conformably with the preceding Art. 1125.

1127. All the circumstances detailed in Chapter V. of this part are taken into consideration in such inquiries.

1128. An enquiry conducted in this manner, with the opinion of all those who took part in it, is dealt with in the local, commercial, magistrates', or (*ratusha*) town-hall Court, whichever of them exists in the place where the proceedings are examined, and the rights of all persons under civil jurisdiction, and the fine to be demanded from them on behalf of the State, or the compensation due to them according to law, for damage caused to them by the Government vessel is defined. In the latter case the question as to who is liable to pay such compensation is not touched by them.* See note to Art. 170 [*ante*].

1129. These cases after being decided by Courts of first instance, may be taken for Appeal to higher [Courts], on the basis of the general laws; that is, in case of private persons being found to blame on their appeal brought forward in legal form and order, and in case of judgment in their favour for the damage caused to them by the Government vessel; or on their being found not to blame for the

* That is to say, that they have no jurisdiction over the persons on board the ships of war, to say whether the captain, officer of the watch, &c., personally or the Government is to blame for the accident, though they state whether the collision was the result of default or simple accident (Art. 1133). It appears from Arts. 1131, 1132, that the State pays damages done by a Government vessel in the first instance. In England, though usually the action is defended by the Admiralty, yet it is brought against the captain of the man-of-war, as the person responsible for her navigation, and as no action will lie against the Crown.

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damages sustained by the Government, then on the law applicable to cases between private individuals and the State.

1130. On the hearing of these cases in Courts of first and second instance, deputies on behalf of the Navy are present, who have equal rights with the other members. The Directing Senate* in cases of this nature requires a preliminary *résumé* from the naval authorities. See note to Art. 1123.

1131. The final decision in these cases is executed as in other cases, with the condition that money fines inflicted on private persons for damage to war vessels should be paid into the marine department, which is obliged to repair the damage for this sum; Judgments in favour of private persons for losses caused to them by war vessels must be satisfied by the Ministry of Finance.

1132. Compensation to private individuals for damage sustained by them and caused by war vessels, must be paid immediately on the final determination of its amount.

1133. (Supt. of 1876).—If a Commission, appointed on the basis of Arts. 1125-1130, for the investigation of the causes of a collision between vessels, finds that the collision was not brought about by the fault of private persons, it must state in detail all considerations, on the basis of which it is possible to state whether the collision was brought about through the fault of the naval officers, or through causes beyond their control, and at the same time produce for the inspection of the naval authorities its preliminary report in this respect.

1134. (Supt. of 1876.)—If, from the data collected by the commission and its report (Art. 1133 Supt.), the naval authorities have reason to suppose that the naval officers are to blame for a collision with a private vessel, they will bring them before a court-martial at once, to decide whether the expenses which the Government may incur in compensating private persons for losses caused by the collision between the vessels, should be demanded from the naval officers, and whether they should be punished according to law for breach of the rules of navigation, or whether the accident should be considered as the unavoidable result of the circumstances

* Or Court of Cassation or Final Appeal. See note to Art. 1135.

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in which they found themselves. For this [purpose] a detailed summary of the case is communicated to the court-martial. If, on the other hand, in the opinion of the naval authorities, the naval officers are not in any way to blame for the collision which occurred, they are not brought before a court-martial, and cannot be held liable for the damages which may be done to a private person.

Note (1857 ed.).—The following regulations relative to the conduct of cases in the Baltic provinces arising out of collisions between Government sea-going vessels and those belonging to private persons were laid down in 1842 :—(1.) The primary investigation of cases of maritime damage between the State and private persons in the Baltic provinces remains as now laid down in the Revel Sea and (*Frachtgericht*) Shipping law, and in the Riga (*Vetgericht*) Nautical law in other places also under that jurisdiction, where these cases are now examined, on condition that they are subsequently brought before a general assembly of local magistrates. (2.) In those towns of the Baltic provinces where there is no special section of the magistracy for cases of this nature, to investigate them strictly in accordance with the foregoing Art. 1128. In the magistrates or (*ratusha*) town hall Court. (3.) Until the revision of the commercial laws of the Baltic provinces, in deciding the above-mentioned cases, local regulations and rules, so far as they are not cancelled by special regulations or Imperial decrees are to be observed as heretofore. When the State is a party in cases of this nature, and there are no definite rules in those local laws for similar accidents [occasions] the proceedings are to be conducted on the basis of the Russian Code. (4.) On the hearing of cases concerning maritime losses, the German language to be used, and in case of the attendance on the part of the Government at these cases, of deputies who do not know this language, translators to be appointed for them. (5.) Deputies may demand the local rules and regulations for their own information from the officers of the tribunals, at the sessions of which they are appointed to attend.

## CHAPTER VII.

## *On Salvage of Ships and Vessels which have been Wrecked or Destroyed.*

### SECTION I.

### *General Regulations.*

1135. A ship or any other vessel is deemed to be wrecked or destroyed when, through stress of weather, want of caution, or any other cause, it founders, or strikes on a rock, bank, or the shore,

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or breaks up, or springs a leak, so that it sinks or lets in water, and appears incapable of repair.

The law recognises as shipwreck or destruction of a vessel, any such condition as finding itself in which it cannot of its own forces and means issue from this state, and must go down in the more or less distant future, should it not receive any external assistance.—(Decisions of the General Assembly of the 1st and 3rd departments, and *Chambre Heraldique*,* of the Directing Senate, in the case of the "Russian Lloyds," 1880. Nosenko's Collection, Vol. IV).

1136. Within the boundaries of the Russian Empire, all things salved from the wreck of Russian and foreign ships or vessels (whether) men, cattle, birds, or other animals, goods, cargo, tackle, and the ship itself, after having been wrecked, are under the immediate protection of His Imperial Majesty (The Czar), and must remain inviolable.

1137. Every Russian subject, especially if in the military or civil service, is bound to aid those who have suffered shipwreck or destruction, and to take all practicable means to salve everything possible.

1138. Everything salved must be kept with every care and precision, and in suitable and safe places, so that it may not be damaged or spoiled through want of care or negligence. No one has any right to appropriate the smallest part of what is salved or found on the shore, but must inform the local police, who will act in such case in accordance with the rules laid down in the following articles.

1139. All foreign goods which have not paid duty in a Russian

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* The Senate of Russia is divided into departments, which promulgate and register laws, ukases, &c., confer (query, decide as to the right to) the titles of the nobility, and as a Court of last resort, adjudicate on State crimes and civil and criminal matters, and review judgments given by the provincial tribunals "*Almanach de Gotha.*" One of these departments is the "Department Heraldique," which, besides the special business of titles of nobility, includes the two Departments of Cassation (civil and criminal). If the analogy be not pressed too far it may be compared to the section of the House of Lords in Great Britain, consisting of the Law Lords and Lords of Appeal in Ordinary, who are principally concerned in deciding all questions of title, and almost exclusively in cases coming before the House of Lords as a Final Court of Appeal.

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Custom House, and which formed the cargo of a wreck ship or are cast ashore, must be taken in charge by the Custom House.

1140. Every ship, wrecked or stranded, Russian as well as foreign, and also all tackle and goods saved, which were exported from Russia, are taken charge of by the local police authorities, and afterwards, by arrangement of the provincial government authorities are either retained by the police or transferred for safe custody to the town magistrates (*ratusha*), town hall, or other civil tribunal. With regard to these goods the Custom House must act according to the rules defined in the Customs Code.

Note. (Note of 1876).—On the suppression of magistrates' and (*ratushi*) town hall Courts in governments administered according to the general establishment, the preservation of wrecked or stranded ships and tackle, and salved goods, is entrusted to the police. This note also relates to Arts 1153, 1172, 1186 and 1192.

1141. It is prohibited to build, within fifty versts of an authorised lighthouse on the coast of the Russian Empire another lighthouse, or to make and burn a fire on the shore to thaw the ice until the water is frozen over.* Anyone guilty of a breach of this rule must be arrested, and sent to the local police to be dealt with according to Art. 1143.

1142. The coast guard and local police are especially bound to see that the rule laid down in the preceding Art. 1141 is strictly observed.

1143. Whoever exhibits a false light or other signal, or does anything which may imperil a ship or vessel, or spoils or damages lights exhibited, or other signals placed for the safety of navigation, or extinguishes the lamps lighted in lighthouses, or does not light them at the stated time, with the intention of causing shipwreck or attracting a ship or vessel to any place in order to plunder it, are liable to punishment on the basis of Arts. 1203-1205 of the Penal Code (1866 ed.). Whoever, without the intention of attracting a ship and causing its shipwreck, lights a fire within the prohibited distance and at a prohibited time, is liable to punishment on the basis of Art. 1205 of that Code. [*i.e.*, Penal Code].

Note.—For such an act of negligence, as carelessness in keeping lighthouses and other signals on the water and on shore for the safety of

* That is, before the navigation is closed.

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navigation in proper order, the guilty party is liable to censure on the basis of Art. 1206 of the Penal Code (1866 ed.).

## SECTION II.

### *On the Regulations to be observed for the Salvage and Preservation of Articles from a Shipwreck.*

1144. Whoever observes the wreck or destruction of a ship or vessel on the [shores] of rivers, waters, and seas of the Russian Empire, and is not himself in a position to render assistance, must immediately give information of it to the people of the nearest village, and to the provincial [district] or village police; or in a town, to the town police, who are bound to use all measures to salve the ship, or vessel, people, goods, and everything that it is possible to save, employing for this [purpose] the necessary number of the people, or inhabitants of the localities, or those happening to be near the spot, none of whom may refuse. See note 1 to Art. 677.*

1145. Local police and frontier guards are bound to render each other mutual assistance and to co-operate in salving men and goods, and to take the greatest care that everything saved is preserved in entirety, and not subjected, through bad supervision and negligence, to damage, and much less to pillage.

1146. If, notwithstanding every precaution, anything is stolen, the inspector of coast guards, or his assistant, must immediately have recourse to the local civil authority, for the recovery of the stolen property and discovery of the thief, in order to bring him to justice.

Note (Supt. of 1876).—The inspector and assistant-inspector of frontier guards are called division [detachment] officers. This note also relates to Arts. 1149, 1150, 1152, 1156, 1158, and 1161.

1147. On the occasion of a shipwreck, as soon as a person commanding the police in that place, or the proprietor of a demesne along the sea coast at that place, or the steward of the property, or his agent arrives, the officer of the coast guard, under whose direction the salvage was carried on up to that time, hands over to such person the further superintendence of the salvage and preservation of proper order, and turns all his attention towards the actual salvage

* This note, which appears in the supplement of 1876, only refers to the re-organisation of the police force of Russia.



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of articles and goods, taking special care, under penalty of personal responsibility, that in such unfortunate circumstances no abuse is effected by secreting goods.

Note.—The regulation contained in this Article, leaving the proprietor, his steward, or agent to arrange for the salvage of a ship that is wrecked, as well as the regulation as to salvage rewards for what is saved in special establishments, and for the arrangements of the proprietor of the littoral concerning salvage, are only applicable to the Baltic provinces, where the proprietors have constructed special establishments for the salvage and preservation of that which has been shipwrecked; in all the other provinces the chief direction in case of shipwrecks remains with the provincial [district] police, and the rule concerning the payment of rewards to private persons who have assisted in the salvage and preservation of a vessel and cargo, can, in these places, only be applied to cases of this nature, on the special representations of the local authorities. See note to Art. 677.*

1148. If the master be saved, everything touching the preservation of salved articles must be done with his wish and consent, and those taking part in the salvage and preservation are bound to render to him, as well as to the seamen and generally to the people on board the ship, every possible co-operation and assistance. When the people are saved and brought on shore, it is necessary to act towards them with all humanity, to assist them in everything necessary for the preservation of their life and health, and to aid in forwarding letters and advices to the owner or to those concerned.

1149. The salved goods are guarded by the inhabitants of the place, by appointment of the local police, and by the gensdarmes and guards, under the supervision of an inspector of coast guard or his assistant. See note to Art. 1146.

Note.—If the coast guard along the coasts of the Sea of Azov be taken away, its duties in cases of shipwreck devolve upon the provincial [district] police, according to the latest disposition of the Governor-General of New Russia. See note 1 to Art. 677 and note to Art. 1144.

*(To be continued.)*

* See note to Art. 1144 [*ante*].

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